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MOTOR AGE

CONDITIONS IN ARGENTINA AND URUGUAY

Sigmund Krausz

ARGENTINA

Argentina, or the Argentine republic, is the great wheat lands of South America. Argentina has a population of 5,000,000 and its capital city, Buenos Ayres, exceeds the 1,000,000 mark. The country has a total area of 1,135,810 square miles, or more than one-third the total area of the United States. The Argentina mail service averages twenty-seven pieces per inhabitant per year, as compared with four pieces in Brazil. Argentina has a good daily newspaper service in the large cities, La Prensa in Buenos Ayres having a 110,000 daily circulation and is located in a palatial home, not excelled by any of the big dailies of America. The city of Buenos Ayres has a park system embracing nine distinct parks, all with wide, well-kept drives, some wide enough for eight vehicles abreast. The city has over 2,000 motor cars today, the majority being French, German, Italian, and English machines, but some American makes are represented and are slowly increasing.

URUGUAY

Uruguay, sandwiched between Brazil on the northwest and Argentina on the south, compared with Paraguay, the two buffer states of South America, is looked upon as being in grave danger of absorption by either of these countries. Compared with Argentina, Uruguay is a pigmy with an area of 72,110 square miles, or approximately the same size as North Dakota, a little smaller than Nebraska, and equal to the combined areas of New York, Maryland and Massachusetts. Although the smallest country in South America it has expended more for education per capita than any other South American country, and its capital city, Montevideo, meaning "Behold the Mountain," has a population of 300,000, and is the most prosperous city in South America. The country has few good roads outside of the cities and in Montevideo are upwards of 200 cars, mostly European. Montevideo has for years been taking a keen interest in motoring and bids fair to maintain it.

MOTOR car imports to Buenos Ayres, Argentine republic, started almost with the early stages of the sport, and the years of 1906 and 1907 were banner periods of the business in Argentine. At that time the fad almost amounted to a craze and whoever was anybody had to have a motor car. Thus it came that at the end of 1907, when a financial stringency and bad crop conditions caused a reversal of good times, the market was glutted to excess. Out of from 1,500 to 1,800 motor cars then owned in the city probably 40 per cent was put on sale as second-hand machines and many were simply put out of commission awaiting the return of better times.

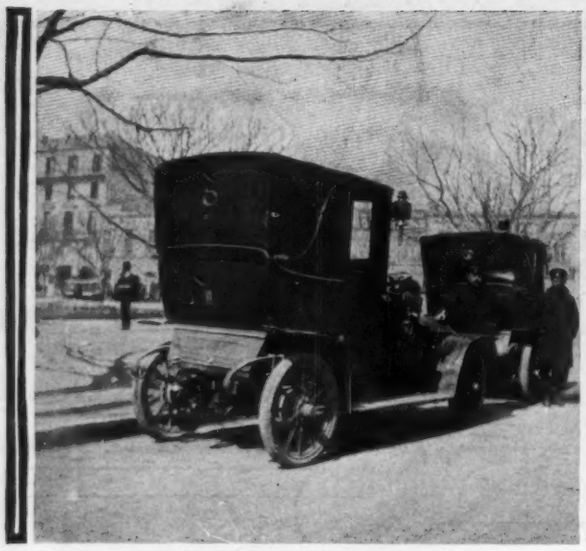
At the occasion of the writer's visit in Buenos Ayres last season the signs of renewed activity were still few, but the outlook for good crops was favorable, the effects of the financial stringency were beginning to wear off and the writer succeeded in establishing for his house a promising agency. That the conditions at the present time are favorable for the further introduction of American cars is proven by the fact that the agency mentioned is continually sending in orders and appears to do a good business.

American Makes Represented

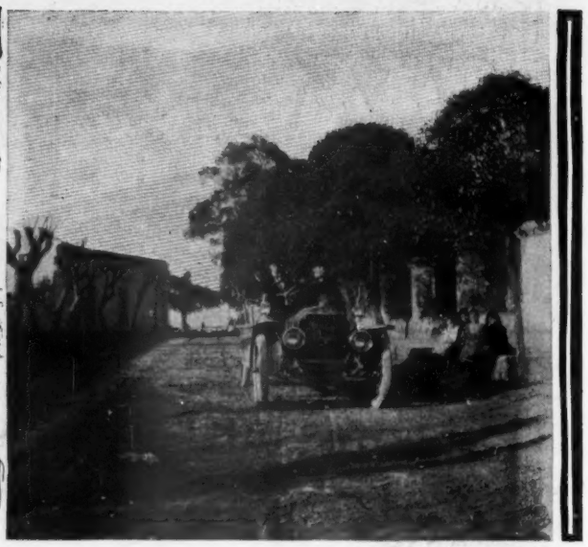
Among the American makes now represented in Buenos Ayres are the Cadillac, the Stoddard-Dayton, the Pope lines, the Buick, Reo, White steamer, and one or two others. The Cadillac is the oldest one established there and its proprietor-manager has the advantage of having acquired the practical knowledge of his business during several years' work at the Detroit factory. With the Stoddard-Dayton it leads in the pioneer work for the United States and has done a great deal toward removing the strongly rooted prejudice of the Argentinian against the American product. This end has been helped to achieve by the fact that the agents of both these cars keep a good stock of spare parts on the ground and thereby remove one of the principal objections against Yankee machines.

The great majority of dealers and commissioners in Buenos Ayres are French, Italian and native, with one or two German and English firms sprinkled between. They have worked tooth and nail to keep out the dreaded American motor car and many of them have resorted not only to slander but to absolutely unfair means to discredit this competition. They have been helped in this by the conduct of French and Italian chauffeurs and me-

EDITOR'S NOTE.—The following resume of motoring conditions in Argentina and Uruguay is by Sigmund Krausz, who recently spent 6 months investigating this territory for an American manufacturer.



TAXICABS IN BUENOS AYRES



IN SAN ISIDRO, ARGENTINE

chanics who, the writer was told, were bribed by certain representatives of European makers to put American cars out of business whenever there was a chance to do so. In the purchase of cars, too, these men had a chance to put in their work, as an Argentinian, as a rule, does not take the trouble to learn anything about a machine, though he may own half a dozen. He buys the car not out of love for the sport, but merely for show. This is the reason, too, why one sees so many luxurious limousines and landaulets of the best makes in the streets, and sometimes they are of a horsepower entirely out of proportion to the requirements of the local topography. The cars predominant in the city are the Renault, Panhard, Brazier, Berliet, Rochet-Schneider, Charron, Delaunay-Belville, Clement-Bayard, Peugeot, de Dion-Bouton, Gladiator and Aries of French make. The Italian population, which is large and wealthy, shows a preference, not unjustified, for their native product and the Fiat, Isotta-Fraschini, Itala, Torino and Bianchi are well represented in the market. The Hispano-Suiza, a Spanish car, has its adherents, and among the English machines the Humber seems to have the call. The Mercedes and Adler of Germany are represented by a big German import firm. The Germans, by the way, are making efforts to get stronger into the Argentinian market and their largest tire manufacturing firm, the Continental, has established a branch house in Buenos Ayres, where a large stock is kept, repairs are made and the trade of Montevideo and Rio de Janiero is looked after. The same is done by the Italian makers of the Pirelli, who have a good tire agency in the city.

Taxicabs Should Be Popular

Being a large and important commercial and industrial capital, Buenos Ayres, with 1,100,000 inhabitants, offers splendid opportunities for American motor trucks, delivery wagons, buses and commercial cars of all description in which the European competition is not half so strong as in pleasure cars. Taxicabs, too, ought to go. There are a number of these already on the streets, all of the collapsible landaulet type, for winter and summer use. They are of French manufacture and are operated by several taxicab companies.

An American specialty, the buggy-type runabout, is decidedly a car which would find a good market if properly introduced. The country west to the Cordilleras and for tremendous distances north is as flat as the American prairie, but the roads, if any, are bad and the ground is soft, for which reasons the high clearance of the motor buggy with its solid tires would be a strong point in its favor. The writer is positive that hundreds of these machines could be sold for use on the large estancias, which often comprise hundreds of square miles. In fact, he was approached several times in Buenos Ayres by prospective agents for such a machine. In order to be a lasting success these little cars would have to be solidly constructed and supplied with a liberal set of spare parts on account of the difficulty of repairs in the localities where they would principally come in use. They would also be in demand in some of the smaller towns, together with the ordinary American runabout of low price but reliable build.

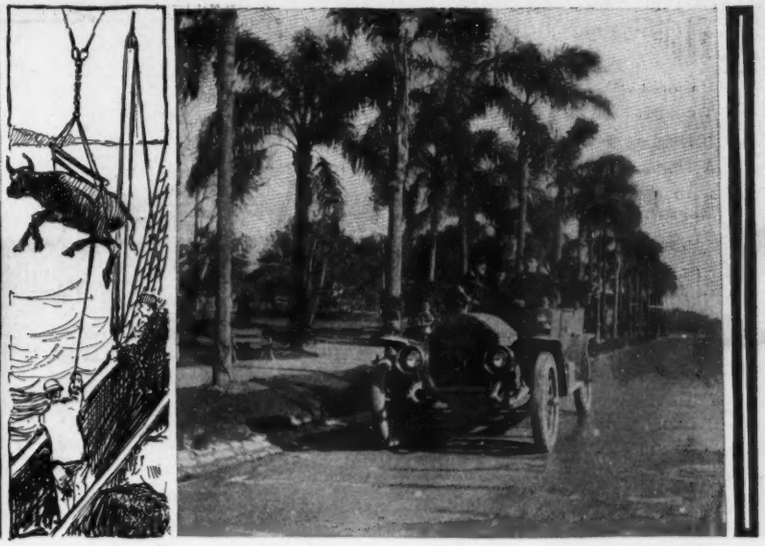
ON TIGRE ROAD, ARGENTINE

Freight Rates Quoted

The freight from New York to Buenos Ayres is the same as to Montevidio, 10 cents per cubic foot, but there are crane, dock and warehouse charges which, with the indispensable services of the dispatchando and for a single car, may amount to as much as the original cost from New York. The duty on cars in Argentine is 10 per cent, with approximately an additional 2 per cent for other charges in connection with the clearing operation, which, frequently, is a very tedious one. As to valuation of the imports, the same method which is observed by the Uruguayans is in vogue here too, since no sworn consular invoice is required by the customs authorities.

Driving in the city is regulated by the municipality and strict adherence to the rules established is required. This is necessary, as most of the streets are so narrow that they permit driving only in one direction, which is indicated by an arrow at the street corners. There are, however, many broad avenues, the principal of which is the famous Avenida de Mayo, but, strange to say, the people prefer, when driving for pleasure, to go up and down the Calle Florida, a narrow retail business street, which is the fashionable street in the afternoon hours. Between 4 and 5 p. m. the motoring public has its rendezvous in the park of Palermo, and it is a pretty sight, especially of a Sunday afternoon, to see the hundreds of fine cars circulating through the palm-lined avenues of this South American Bois de Boulogne. The aspect reminds one forcibly of that famous Parisian park, and

AVENIDA DE MAYO, BUENOS AYRES



IN THE PARK OF PALERMO, BUENOS AYRES

when the lines drive back to the city between 5 and 6 o'clock in the evening, the Avenida Alvear, which is the connecting thoroughfare, is almost as crowded as the Champs Elysees at a similar hour in summer.

Street Sprinkling Overdone

The one thing to mar the pleasure of these drives is the nuisance of sprinkling, which is overdone in Buenos Ayres. The sprinkling cart is in evidence from morning to night, in sunshine and cloudy weather, and even immediately after a shower one can find the water fiend at work with a cart, hose or sprinkling can. Under the conditions a big business in anti-skid tires is done by the dealers and it is only a pity that such devices cannot be employed on horses, who fall on the slippery pavements by the dozen. It takes careful driving under the circumstances, and it is perhaps to enforce this that the municipality has of late taken some drastic measures relating to the driving of cars within the city limits. The chauffeurs' examinations have been made more severe than formerly; young men under 18 are not allowed to drive machines of higher horsepower that 18, and among other things acetylene lamps are forbidden at night, that is, the lighting of them. This measure is regarded even by the motorists as a good one in view of the fact that the city is well lighted.

To further help the cause of motoring by securing adequate legislation and to promote the interests of dealers and garage proprietors, the Sociedad Union Commercial de Automoviles has been formed last fall by a combination of importers, livery, garage owners and accessory dealers. This society also has the object of improving the general character of chauffeurs' and mechanics' service and therefore has the sympathy and active support of all private owners. It was the psychological moment for the formation of just such a society, as the business had certainly been demoralized and needed energetic measures and unity of purpose to bring it back to its normal state.

Club Not a Factor

Remarkable to say, the Automobile Club of Buenos Ayres is no factor whatever in the development of motoring in Argentine. Like the organization of Rio de Janiero, Brazil, it confines its efforts principally to the promotion of social functions, and if it were not for the Touring Club of Buenos Ayres there would be hardly any effort made even toward the improvement of city streets and country roads.

The latter organization is really doing the work of a motor club and some members of it, especially the proprietor of the great newspaper, La Prensa, use the power of their political and social influence very energetically in the cause of road improvement. This is badly needed in the country adjacent to the city, and at present there are but few roads on which one may venture with a car for some distance out of Buenos Ayres. The best of these is the one leading to a summer resort called Tigre. Its whole length, however, is only about 25 miles and the latter part of it, the stretch after the village of San Fernando, is not what one would call a good motoring road. The first part of it, shortly after leaving the city limits and Belgrane, takes one over the so-called motor car speedway which is a 3-mile stretch of fine macadam road specially constructed for the use indicated by its name. It is barely 20 feet wide and fenced in its whole length with barbed wire. It is too narrow for racing and the first motor car races in Argentine, which took place last season, had to be confined to kilometer events in the broader avenue of the park of Palermo.

SPEEDWAY NEAR BELGRANO

Motoring Conditions Generally

To speak of motor conditions outside the capital of the republic is hardly worth while with the possible exception of the city of Rosario—100,000 inhabitants—where a small number of cars are owned, but where, so far, no regular agencies have been established. It is doubtful, too, whether such an enterprise would pay, as the Rosarians, considering the short distance of their city from Buenos Ayres, would not be likely to patronize it very extensively. The next largest cities, Cordoba, Santa Fe, Tucuman and Mendoza, have as yet hardly developed an embryo of motorism, and with the poor condition of their streets and environ roads it will take quite a while before they will be worth paying special attention to.

Relating to the other branches of the motor industry, it is the writer's opinion that American specialties in car accessories would find a good market in Argentine. Good and low-priced tools and lamps especially ought to sell, in which article American manufacturers can easily compete with the French and Germans. The outlook for a prosperous business in motor cycles is very encouraging and American tire manufacturers, if properly repre-

sented, ought not to find it difficult at all to get a good foothold in the Argentine republic, which is the most important of the South American states and certainly is a country of the future.

Question of Trade Marks

Attention must be called to a matter not to be neglected by any American manufacturer who expects to establish permanent relations in Argentine. It is the question of trade marks. The law relating to such does not protect the foreign rightful owner unless he registers his make in proper form before attempting to import any of his goods. It has happened that a well known trade mark was registered by unscrupulous natives before even an attempt had been made to ship goods to Buenos Ayres. In this case the rightful owners, when they really started to do business in Argentine, had to negotiate with the blackmailers before they were enabled to put their goods on the market. The cost of registration is not excessive, ranging from $50 up, according to the standing of the lawyer handling the matter. The protection afforded is good for 10 years and may be renewed after that term.

Motoring in Uruguay

By the nature of things Uruguay will not play a very important part in the near development of the South American motor car business. The country is small, its population limited, and the only city which may be considered from a business point of view by the exporting motor car manufacturer is Montevideo, its capital.

Uruguay is an agricultural and cattle-raising country with many large ranches, but communication between these and from the interior of the country in general to the capital is exceedingly difficult. There are hardly any roads to speak of that are practicable even for ordinary ox or horse-drawn vehicles, not to speak of motor cars, and the railroads connecting the few towns that deserve this appellation with Montevideo are but one or two.

URUGUAYAN COUNTRY ROAD

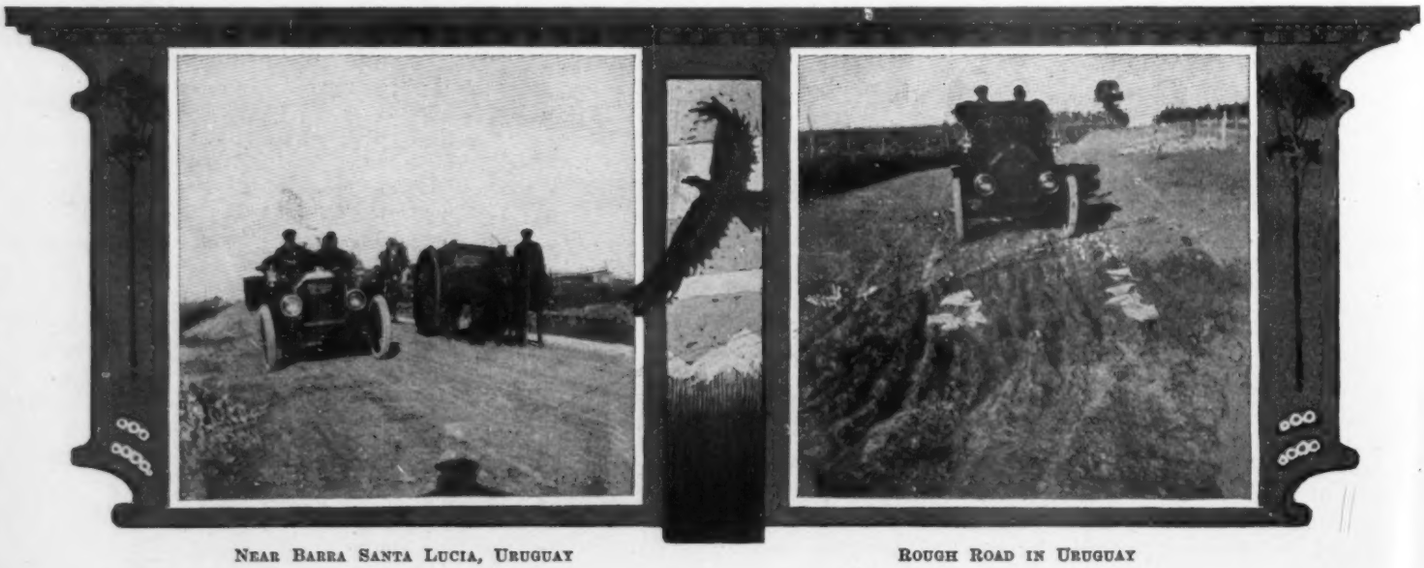
In the immediate vicinity of the capital there are several roads in good condition for motoring which radiate in different directions and permit a little touring during the dry season. The longest of these roads does not exceed 40 miles and each one of them, under the best conditions, is broken by stretches that are difficult to negotiate. It is not to be wondered, therefore, that outside of Montevideo, there is not a single motor car owned in Uruguay. In fact, 30 miles from the capital the sight of a car is enough to make the village populations gather in amazement.

Until 3 years ago there was no duty imposed on motor cars shipped to Montevideo, but with the slowly growing importation the government has put 10 per cent on the article with 3½ per cent additional charges. This is not prohibitive, especially when one considers that no consular invoice is exacted and that conditions exist in the custom house service which enable the importers to bring cars into the country at practically their own valuation.

Custom Formalities

The customs formalities are not so tedious as in Brazil, as the Uruguayans are a wider-awake people and nearly come up to the Argentinians as hustlers; but a harbor condition exists at Montevideo which makes the landing of a motor car an expensive matter. The steamers anchor out in the bay and a trust of three lighterage companies has its own way in the matter of landing charges. Although freights from New York to the La Plata ports to Montevideo and Buenos Ayres come only to 10 cents per cubic foot—a paradox when compared with the 24 cents to Rio Janeiro and 30 cents to Bahia in Brazil—making the transportation cost for an average motor car from $50 to $60, the lightering charges amount to more than that and $10 extra is demanded for rolling the case from the dock into the government warehouse, a short distance away, where the clearing takes place. The finishing of the new harbor works, now in process of construction, which will enable steamers to discharge cargo directly on the wharfs will fortunately put an end to these big charges. With the characteristic slowness of such work in Latin-American countries it will take several years yet before this evil can be abolished.

There is no exclusive motor car salesroom in Montevideo, and no agent or dealer in the sense understood in the United States. Motor cars are imported either individually by private, owners who generally purchase them during a European tour, or by the several large import houses who act as agents or commissioners for the manufacturers. These houses are German, English or Italian, and steamer conditions being any way more favorable to European imports, it was natural that in the beginning of the business no American cars at all were shipped to Uruguay. There are now somewhere between 100 and 200 cars in Montevideo, a city of more than 300,000 inhabitants, among which the French machines predominate by far, and the very small American contingent in the number has only been contributed during the last 2 years.



NEAR BARRA SANTA LUCIA, URUGUAY

ROUGH ROAD IN URUGUAY

From Washington to Mexico

Camp in the Mountains

Pitt River in California

In the Mojave Desert

IT is a 3,000-mile ride down the Pacific coast between Seattle and Tia Juana, Mexico, but when it was suggested to Mr. and Mrs. Roy that such a motoring trip would afford a pleasant outing, they very readily consented. The party also included Charlie, the Japanese servant, whose manifold duties included caring for the inner man, chaperoning the baggage, and acting as a tender whenever the expedition might anchor. The Packard runabout carried equipment of tent, small hair-mattress, blankets, two rubber robes, folding stove, reflector, camp dishes, fishing tackle, rifle, shotgun, a week's provisions, two trunks, waterproof sack for bedding, canteen, kodak and two extra tires.

Facing southward, the first stage of the 3,000-mile trip lead through Tacoma, and thence to the Columbia river, which was crossed at Cascade locks. Beyond this the route was along the eastern borders of Oregon and California, where divers turns and conditions on the road were encountered. The monontony of traveling was ever broken by the necessity of fording rivers. The tourists crossed, in all, some 300 streams. Also, they became near gamblers, by laying small wagers as to the ability of the car in running the different rivers. Just as they were driving out of the Pitt river in northwestern California and starting to climb the opposite embankment the rope around the rear wheel came off and the wheel could get no traction on the slippery bottom. One of the party was forced to take off his shoes, wade into the stream and rewind the partially submerged wheels. The lakes and rivers in eastern California abound in fish and numerous fowl frequent their shores. Thus the tourists were provided with good sport and at the same time found it easy to keep their larder filled with fresh foods.

One of the greatest pleasures was to make the camp on the shore of one of the many lakes. The Roys never tired of watching the wonderful western sunset, turning the surface of the water into many hues of gold and crimson, that ended in the lengthening shadows of the trees across the lake. The evening quiet was seldom broken except by the call of the wild fowl, flying to haunts where the wild forest met the passive waters.

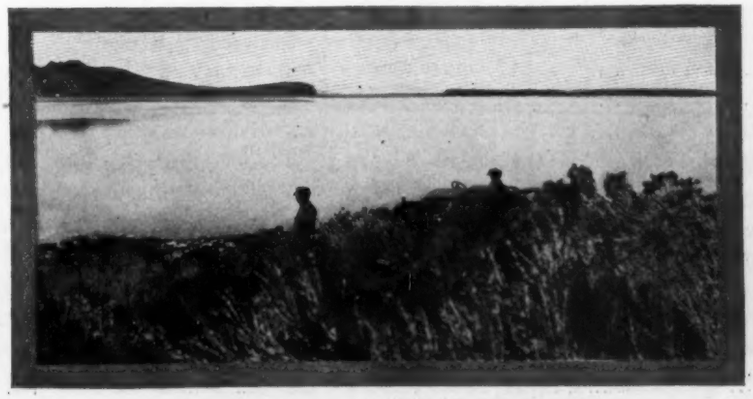
The pleasure of the outing each day seemed to increase. Two days' experiences never were alike. Under cloudless skies and over good, bad and indifferent roads, the tourists ambled southward into California and then toward the coast. They had no car troubles. It was a royal journey.

Charlie, the precocious Jap cook, almost came to grief one evening when the Roys planned a duck supper and sent the son of Nippon out with a shotgun to obtain the makings. Later they came upon him chasing what he called a little black dog, but which was obviously a skunk. Charlie was rescued before the doggie recovered its presence of mind.

After working the way through the mountains and spending a short time in San Francisco, the Roys kept close along the railroads to Los Angeles. Thence they cut southeastward to the Mexican town which was their goal. The first real difficulty of the tour they encountered on the frontier, in the nature of a Mexican customs officer who forbade their proceeding into his country without a lot of things they did not have or know how to get. They had about despaired of entering Mexico when the officer observed Mr. Roy's Shriner's pin. He quickly extended his hand, enthusiastically declared that they were brothers, raised the embargo and extended every possible courtesy.

Thus the travelers came to Tia Juana, a small border town made up of board shacks and frontier characters, ranging from greasers to Frisco drummers. It was the end of the trip southward and the Roys celebrated—not by shooting up the town—but by sampling all its many kinds of doubtful and other Mexican eating, such as the real tamale and con carne.

After a rest and a re-fixing of luggage, they started their return trip, via the coast line, taking in Coronado, Santa Barbara and Monterey. They traveled over what is known as El Camino Real, or the old Spanish road built in the time of the Jesuits. All the Pacific slope is beautiful. The shifting scenery from the south to the north makes an enchanting picture of which one never tires. But it is always good to rise over the top of a great hill after having traveled 3,000 miles and catch the unexpected first glance of home. So the Roys saw Seattle. You may be sure they beat it for the last few miles which ended the journey.



Rhett Lake Between Oregon and California

THIRTY CARS IN FINAL LINEUP AT CHICAGO

COBE CUP GRAND STAND, CAPABLE OF HOLDING 10,000 PEOPLE

CHICAGO, June 8—Thirty entries—twelve in the Cobe cup and eighteen in the Indiana trophy—have been received for the road racing carnival of the Chicago Automobile Club, set for decision June 18 and 19 over the Crown Point-Lowell course, the list officially closing Saturday at the regular fees, although it is possible for others to get in up to Thursday of this week upon payment of an extra charge of $250 a car. In point of numbers this compares most favorably with Savannah, which has the record with thirty-seven entries. The Indiana trophy race has one more in than Savannah had for its light car event, the discrepancy coming in the big race, Savannah having an even twenty in its grand prix, while Chicago has only twelve. The Cobe cup, though, has attracted eleven American cars, whereas the Savannah grand Prix only had six in. In the Indiana trophy seventeen of the eighteen cars are of American construction; in fact, in the two races there are only two foreign cars, the Fiat in the Cobe cup and the Renault in the curtain-raiser.

Thirteen Makes Represented

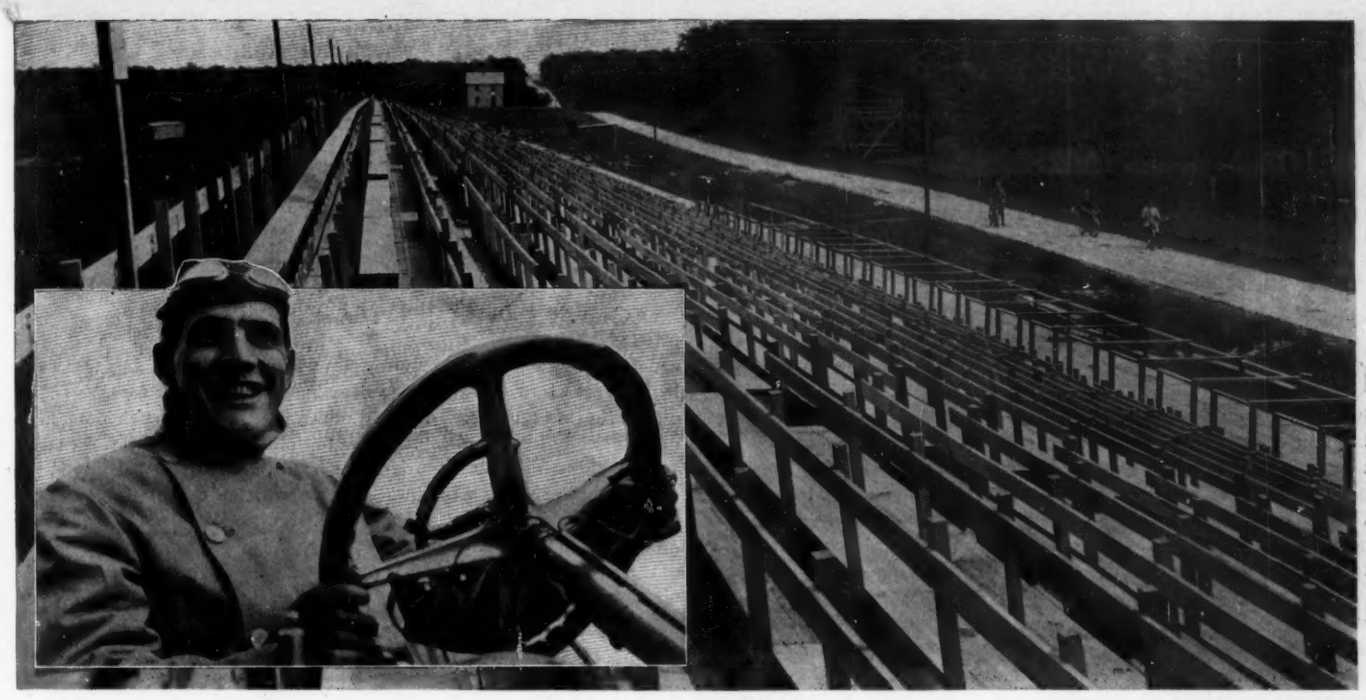
Thirteen different makes of cars are represented in the two races, six being in the Cobe cup. In addition the Locomobile, Stoddard-Dayton and Buick are in both contests.

With the entry proposition off their minds the promoters of the contests are now busily engaged in completing the arrangements at Crown Point. The course is rapidly nearing completion and it is expected the contractors easily will finish by the stipulated time—tomorrow. The entire circuit has been treated with taroid and while there has been no attempts made at speed it is more than apparent that the course is lightning fast. Indeed there is hardly a driver who has seen it who has not predicted a smashing of records in both events. Considerable difficulty has been experienced by motorists getting on the course just for the purpose of trying it. Generally the result has been that they have had their cars plastered with tar.

The big grand stand, which is designed to hold 10,000 people, is as good as done, although the contractors still have several days more in which to put on the finishing touches. The sale of seats for this big stand is up to expectations, although the demand so far has been more for boxes and parking spaces. Only thirty of the 164 boxes remain, while the club has been forced to secure additional parking space. But judging by the inquiries the grand stand seat sale will open up before the end of the week, so that everything should be sold 2 days before the races. The club is meeting the usual opposition in the shape of rival grand stands where the prices are shaded. But these rival

SPECIFICATIONS OF CARS THAT WILL COMPETE FOR THE COBE TROPHY NEXT WEEK

NAME OF CAR	ENTRANT	DRIVER	NO. OF CYL.	CYL. BORE	CYL. STROKE	WHEEL BASE	TIRES		CLUTCH	TRANSM'S'N			FINAL DRIVE	COOLING	OILING	IGNITION	BRAKES
							FRONT	REAR		TYPE	SPEEDS	REVERSE					
KNOX	KNOX AUTOMOBILE CO.	A. DENISON	4	5	4¾	106	36X4	36X4	THREE PLATE	SEL.	3	1	SHAFT	GEAR PUMP	GEAR PUMP	DUAL	1 SET ON REAR WHEELS 1 SET ON PROP. SHAFT
KNOX	KNOX AUTOMOBILE CO.	W. BOURQUE	4	5½	5½	106	34X4	36X4½	DISK	SEL.	4	1	CHAIN	CENT. PUMP	GEAR PUMP	DUAL	1 SET ON REAR WHEELS 1 SET ON TRANSMISSION
LOCOMOBILE	LOCOMOBILE CO. OF AMERICA	G. ROBERTSON	4	5	6	123	36X4.1	36.2X4.7	CONE	SEL.	4	1	CHAIN	CENT. PUMP	PUMP	TWO	1 SET ON REAR WHEELS 1 SET ON JACK SHAFT
LOCOMOBILE	LOCOMOBILE CO. OF AMERICA	J. FLORIDA	4	5	6	123	36X4.1	36.2X4.7	CONE	SEL.	4	1	CHAIN	CENT. PUMP	PUMP	TWO	1 SET ON REAR WHEELS 1 SET ON JACK SHAFT
FIAT	ED. A. HEARNE	ED. A. HEARNE	4	5.1	5.5	126	34.6X4.7	36.6X4.7	DISK	SEL.	4	1	SHAFT	CENT. PUMP	PUMP	SINGLE	1 SET ON REAR WHEELS 1 SET ON TRANSMISSION
BUICK	BUICK MOTOR CO.	L. STRANG	4	4½	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON REAR WHEELS 1 SET ON TRANSMISSION
BUICK	BUICK MOTOR CO.	L. CHEVROLET	4	4½	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON REAR WHEELS 1 SET ON TRANSMISSION
BUICK	BUICK MOTOR CO.	R. BURMAN	4	4½	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON REAR WHEELS 1 SET ON TRANSMISSION
APPERSON	APPERSON BROS. AUTO. CO.	HERBERT LYTLE	4	5¾	5	116	34X4	34X4½	CONT. BAND	SEL.	4	1	CHAIN	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON PROP. SHAFT 1 SET ON REAR WHEELS
APPERSON	APPERSON BROS. AUTO. CO.	J. SEYMOUR	4	5¾	5	116	34X4	34X4½	CONT. BAND	SEL.	4	1	CHAIN	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON PROP. SHAFT 1 SET ON REAR WHEELS
STODDARD-DAYTON	DAYTON MOTOR CAR CO	B. MILLER	4	5¼	5¾	106	34X4½	34X4½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
STODDARD-DAYTON	DAYTON MOTOR CAR CO	C. A. ENGLEBECK	4	5¼	5¾	106	34X4½	34X4½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS



A. W. GREINER, RENAULT

FINISHING STRETCH FROM GRAND STAND

places do not appeal to the initiated because they are cut off from all the official information in the way of times and standing, while the repair pits can be seen only from the official vantage point.

Trego Going to Crown Point

General Executive Trego intends moving his effects to Crown Point on Thursday and establish his quarters there. On that day the official drawing for numbers will take place, while practice on the course will not begin until next Monday because of the objection of the Lake county farmers who did not wish to have their roads tied up for 10 days as was at first contemplated. The training will take place between 2 and 4 o'clock in the afternoon because of the fact that the farmers have to use the roads in the morning to make milk deliveries.

Already there is a gathering of the clans. Robertson and Florida, with their mechanics, Campbell and Ethridge, are here and the Locomobile camp at Crown Point will be established tonight. The Chalmers-Detroit outfit has been located at Lowell for a week, few suspecting that the Detroiters were there. George Bill is in charge of the camp and he has with him five men and four cars. The third Chalmers entry was not made until the final moment at which time the company announces that its drivers will be Al Poole, William Knipper and Joe Matson. Poole, everybody knows, formerly was Tracy's mechanic and last year he drove the Isotta in several road races. Knipper has just finished the Denver-City of Mexico stunt and is hurrying home for the new venture, while Matson gained fame as the driver of the Corbin last year in hill-climbs and reliabilities.

The two Fal-cars are making their debut into competition and the Chicago concern manufacturing them has been pushed to the limit to get them out in time. This delayed the entry to the final moment, when Sales Manager Averill turned in the check.

The Chicago Automobile Club is determined to make both races stock propositions and to insure this the members of the technical committee already have started their work visiting the various factories. F. E. Edwards went to Flint and Detroit Saturday, while Berne Nadall swung into Indiana and Ohio last night. Chairman Beecroft goes east tonight. At each factory duplicate cars are examined and measured and before anyone is allowed to start there will be another examination to see if the two sets of figures agree.

SPECIFICATIONS OF CARS THAT WILL COMPETE FOR THE INDIANA TROPHY NEXT WEEK

NAME OF CAR	ENTRANT	DRIVER	NO. OF CYLS.	CYL. BORE	CYL. STROKE	WHEELBASE	TIRES		CLUTCH	TRANSM'S'N			FINAL DRIVE	COOLING	OILING	IGNITION	BRAKES
							FRONT	REAR		TYPE	SPEEDS	REVERSE					
CORBIN	CORBIN MOTOR VEH. CORP.	A. J. MAISONVILLE	4	4½	4¼	100	34X3½	34X4	CONE	SEL.	3	1	SHAFT	PUMP	PUMP	DUAL	2 SETS ON REAR WHEELS
RENAULT	ARTHUR W. GREINER	ARTHUR W. GREINER	4	3.93	5.51	....	36X4¾	36X4¾	CONE	PROG.	4	1	SHAFT	THERMO-SYPHON	PUMP	SINGLE	1 SET ON DRIVE SHAFT 1 SET ON REAR WHEELS
LOCOMOBILE	LOCOMOBILE CO. OF AMERICA	G. ROBERTSON	4	4½	4½	120	34.4X4.1	34.6X4.7	CONE	SEL.	4	1	SHAFT	CENT. PUMP	PUMP	DUAL	2 SETS ON REAR WHEELS
LOCOMOBILE	LOCOMOBILE CO. OF AMERICA	J. FLORIDA	4	4½	4½	120	34.4X4.1	34.6X4.7	CONE	SEL.	4	1	SHAFT	CENT. PUMP	PUMP	DUAL	2 SETS ON REAR WHEELS
FORD	FORD MOTOR CO.	DUNNELL	4	3¾	4	100	30X3	30X3½	DISK	PLAN.	2	1	SHAFT	THERMO-SYPHON	FORD FLY-WHEEL	DOUBLE	1 SET ON TRANSMISSION 1 SET ON REAR WHEELS
CHALMERS DETROIT	CHALMERS-DET. MOTOR CO.	AL POOLE	4	4	4½	110	33X4	33X4	DISK	SEL.	3	1	SHAFT	CENT. PUMP	PUMP	DOUBLE	2 SETS ON REAR WHEELS
CHALMERS DETROIT	CHALMERS-DET. MOTOR CO.	W. KNIPPER	4	4	4½	110	33X4	33X4	DISK	SEL.	3	1	SHAFT	CENT. PUMP	PUMP	DOUBLE	2 SETS ON REAR WHEELS
CHALMERS DETROIT	CHALMERS-DET. MOTOR CO.	J. MATSON	4	4	4½	110	33X4	33X4	DISK	SEL.	3	1	SHAFT	CENT. PUMP	PUMP	DOUBLE	2 SETS ON REAR WHEELS
BUICK	BUICK MOTOR CO.	L. STRANG	4	4 31/32	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON PROP. SHAFT 1 SET ON REAR WHEELS
BUICK	BUICK MOTOR CO.	G. DE WITT	4	4 31/32	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON PROP. SHAFT 1 SET ON REAR WHEELS
BUICK	BUICK MOTOR CO.	R. BURMAN	4	4 31/32	5	112	34.4X4.1	34.4X4.1	CONE	SEL.	3	1	SHAFT	GEAR PUMP	FORCE FEED	SINGLE	1 SET ON PROP. SHAFT 1 SET ON REAR WHEELS
MOON	MOON MOTOR CAR CO.	PHIL WELLS	4	4½	4½	112	34X4	34X4	DISK	SEL.	4	1	SHAFT	PUMP NO FAN	PUMP	SINGLE	2 SETS ON REAR WHEELS
STODDARD-DAYTON	DAYTON MOTOR CAR CO.	WISEMAN	4	3⅞	4½	106	34X4½	34X4½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
STODDARD-DAYTON	DAYTON MOTOR CAR CO.	WRIGHT	4	3⅞	4½	106	34X4½	34X4½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
MARION	MARION MOTOR CAR CO	H. E. STUTZ	4	4½	4½	112	34.4X4.1	34.4X4.1	DISK	PROG.	3	1	SHAFT	CENT. PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
MARION	MARION MOTOR CAR CO	A. MONSEN	4	4½	4½	112	34.4X4.1	34.4X4.1	DISK	PROG.	3	1	SHAFT	CENT. PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
FAL-CAR	FAL MOTOR CO.	W. H. PIERCE	4	4½	4½	108	34X3½	34.3½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS
FAL-CAR	FAL MOTOR CO.	JOHN RUEHL	4	4½	4½	108	34X3½	34.3½	CONE	SEL.	3	1	SHAFT	GEAR PUMP	PUMP	MAG. & BAT.	2 SETS ON REAR WHEELS

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The Stock Chassis Not Yet Defined

ON JUNE 18 and 19 Chicago and the west are to have their first test of road racing, the two stock chassis events to be put on by the Chicago Automobile Club being the first of the kind in this part of the country. These events not only mark a new epoch in motoring in the west, but considerable interest centers on them because of the special efforts being put forth by the technical committee to have the cars as nearly stock as possible. Heretofore the expression stock chassis has meant little to the average motorist, due to the fact that not sufficient effort has been made by the promoter to determine the exact stock status of the competing cars; but in the present case exceptional efforts are being put forth. The entry blank goes one better than the "fifty-seven" varieties, in that seventy-nine questions are asked regarding the specifications of the stock machines; but the effort to obtain stock chassis goes still further in that the technical committee in charge has visited all the factories represented in the races to check over the stock parts of the machines, and see if the requisite number is being built for the coming season. This is a most creditable undertaking on the part of the committee and should do much towards bringing out a strictly stock chassis contest.

ACCORDING to the rules, however, the Chicago races will not be entirely stock, as latitude is permitted by way of unlimited gasoline capacity, unlimited oil capacity, any angle of the steering pillar, lighter rear springs, any tire equipment, and auxiliary oiling, by means of hand-pumps. Some of these exceptions have a right to be made in stock cars; one being the lighter rear springs, which are imperative because of the reduced weight, owing to the absence of the body, and also the excessive vibration caused by the higher speed at which the car travels. This also suggests the other natural permissible, viz., the equipment of shock absorbers if desired. Although there is every permission for these changes, there seems little reason for some of the others; foremost of which comes the use of any angle of the steering pillar. This has a particularly bad effect on the spectators, in that as soon as the car with the heavily-tilted column is seen the thought immediately flashes through the spectators mind that it is not a stock car. In some of the fastest cars competing in the contest the steering columns will be at the normal angle of 40 degrees, whereas in others they will be nearly 20 degrees. In a course such as the Crown-Point-Lowell one there is little advantage in the raked column because of the few turns on the course. In the days when corners were taken at higher speeds, at the expense of tires, the lower the driver was seated the better, but in a 400-mile race turns will be taken sanely and it will be as easy to take these with a normal steering column as with one almost horizontal.

THE unlimited gasoline supply is a permissible change because the supply of the ordinary car is largely limited by the body capacity and it is unfair to handicap it in this respect. Unlimited oil capacity has become imperative because of the new runabout types brought out by a few manufacturers, in which capacity for 300 or 400 miles has been fitted. According to the rules all cars are alike from the lubrication point of view, because auxiliary hand-pumps are permitted for injecting oil into the crankcase. There is a certain amount of justice in this provision in that cars in a 400-mile race are at a much greater tension than under the most extreme touring conditions, and as such demands additional oiling capacity. It is permissible to allow increased capacity, but no alteration in the system, and in this respect it is questionable if it is wise to allow the addition of hand-pumps for injecting oil into the crankcase cylinders. The system fitted on any car should be adequate by extra adjustments for the most extreme conditions, such as road racing. Some cars are fitted with miserably inadequate oil capacities, having to supply every 75 or 100 miles, and it is regrettable that these cars should be on an equal basis in a road race with others that ordinarily have oiling capacity for 200 or 300 miles.

MUCH study has yet to be given to the stock car problem before it will be entirely satisfactory to the great motoring public. The representation of ten or twenty-five cars of the same model to be manufactured by each builder is not fair, as has been demonstrated in conjunction with the Chicago races. To build twenty-five special cars is a mere bagatelle for a concern with an annual output of 12,000 machines, whereas to an equally legitimate concern building 400 to 500 machines per year it is a big task. Because of this the number of cars determining a stock chassis should not be any arbitrary number, but a percentage of the concern's output of the present or preceding year. This percentage could only be determined by a careful analysis of the concern's output, but it should not in any case be less than 35 per cent of the total output.

ONE unexplainable privilege of the rules is in tire and rim equipment. This is inexplainable because the proper tire equipment is a most important thing in any car and any concern supplying demountable rims at list price should be credited with that advantage in a list of this nature. Tires constitute the major problem in the ordinary operation of a car and under no circumstances should they be entirely eliminated in a road contest of this nature. Cars should not be permitted to use larger sizes than ordinarily fitted with.

The relative merits of six and four-cylinder cars in road race work will not be determined by the coming Chicago events. The limiting of the cylinder capacity to 525 cubic inches in itself barred out the majority of the sixes. One or two manufacturers are at present suggesting that sixes should be permitted to compete even if their cylinder capacity is 20 per cent in excess of that of the fours. Any ruling of this nature would be welcomed by the makers of sixes, as it would give them an opportunity of testing their speed with that of the four-cylinder creations. The great claim of six-cylinder construction as compared with four-cylinder design is flexibility, which is not tested to any extent in a road race, excepting in that it should act as a general conserver of the machine and tires. Six-cylinder types have not been introduced solely to give additional power, and as a consequence it would be at least an excellent experiment to give some leeway in admitting them into piston displacement classes by allowing them an extra 15 or 20 per cent displacement as compared with four-cylinder designs.

EDGE TELLS HIS AMERICAN MOTORING PLANS

BOSTON, MASS., June 5—S. F. Edge, of London, holder of the world's 24-hour record of 1,582 miles, spent a day in Boston last week as the guest of Charles J. Glidden. He told Motor Age's representative that it was his first visit to America and he made the trip at a day's notice. He declares it will not be his last and he stated that he was seriously considering establishing a factory in this country and spending 6 months of every year here. The climate appealed to him, for it seemed to put new life into a man, he explained.

It was stated here today that Mr. Edge had completed all the arrangements whereby the Napier company of England has taken over the American Napier plant at Jamaica Plains, near Boston. It also was stated that Mr. Napier will spend 6 months here each year and Mr. Edge the other 6 months. The American Napier plant has not been doing a very large amount of work and there have been labor troubles there that hampered it. The news is not so very surprising in view of the statements of Mr. Edge that he had urged Mr. Napier to come here several years ago and build cars for the American market.

Mr. Edge said that there seems to be a widespread feeling everywhere abroad now in favor of the small-powered car and that his company is building many of a light type of about 16 horsepower. He said the same is true of the factories in France and Germany. Mr. Edge said he regretted that France had buried the big races, which was due to the fact that its motor makers would not race when they saw there was a possibility of their being beaten. He thought there would be a revival of racing again on the other side, because the people will demand some such sport.

Mr. Edge said that the demand for taxicabs in England is growing rapidly. His factory now has orders enough on hand to cover the next 2 years. He said the Napier officials did not want to tackle the taxicabs at first but they were induced to try it and the orders since then have been amazing. He says this is due somewhat to the fact that the company has designed a ball-bearing motor that greatly lowers the upkeep cost, because there is practically no wear, and when needed a new part may be slipped in by the ordinary man without knowledge of mechanics. So the driver need not be a man who knows anything about the motor except to start and stop it. One reason for his visit to this country was to pay a visit to a man at Toronto, Can., who is going to establish a taxicab service there. This man visited the Napier factory and shortly after he sent in an order for fifty cabs. Mr. Edge said that the price of gasoline would not have any effect upon the motor industry in England, particularly the taxicabs as some reports said. The addition of a small tax would hardly be felt, he said. Even now with all the cabs in London it is impossible to get one after the theater unless an order has been placed in advance, he stated. The road problem was being worked out satisfactorily, he added.

English Maker Will Pass 6 Months of Each Year in This Country—The Latest News

Holds Municipal Parade

Indianapolis, Ind., June 5—This city had its first municipal parade last Wednesday afternoon, when all city officials and employes and all vehicles, machinery and horses and mules owned by the city were shown. Mayor Bookwalter planned the parade as an eye-opener to the taxpayers, and it proved quite successful in that respect. The parade, incidentally, showed what an important part the motor car is playing in city affairs. In line were the following motor cars owned by the city: Two Rapid police patrol wagons, National police emergency touring car, police Autocar inspection runabout, Waverley electric city dispensary ambulance, Fire Chief Coots' Marion roadster, Coppock fire alarm telegraph wagon, Ford runabout of street commissioner, Reo runabout of city engineer, Maxwell runabout of inspector of contagious and infectious diseases. In addition to this the mayor borrowed about fifty touring cars in which rode all of the official boards, heads of departments and other officials. The only unpleasant incidents were the partial destruction by fire of a Pope-Toledo touring car owned by Thomas Meeker, a hotel man, and the fact that the car in which the mayor started balked and had to be abandoned. The mayor finished the parade in the police touring car.

Pittsburg's Outing

Pittsburg, Pa., June 7—The Automobile Club of Pittsburg made exactly 675 children happy on June 4 by giving them their annual ride. A committee composed of Secretary Paul C. Wolff, Edward Kneeland, Edward J. Kent, John A. Hawkins and A. E. Nieman arranged the run. The parade formed at Craig street about 10 o'clock and took the children out to Highland Park, where the big zoo was thoroughly inspected. About noon the cars took the crowd of little folks over all the boulevards of the East End, winding up in Schenley park at 1 p. m., where an elaborate lunch was served near the Panther Hollow bridge, one of the highly prized beauty spots of Pittsburg. More riding followed in the afternoon and the children were left at their respective homes about 4:30 p. m. Director of Public Safety John Morin and Superintendent of Police Thomas A. McQuade were along and provided all sorts of protection so that not an accident occurred. The party of children enjoying the ride in the 133 cars is larger than any previous year and the club received many real tributes for the success of this undertaking.

Rush On to Seattle

Kansas City, Mo., June 8—The New York-Seattle race reached here tonight, when the two Fords came in at 5:35, followed an hour later by the Acme and Shawmut. The Itala is reported to be ditched near Litchfield, Ill., having broken a wheel. Its crew is in St. Louis seeking a new wheel. A sixth car, Oscar Stolp's Stearns, is somewhere in the rear, having been permitted to start from New York Saturday and run wide open to catch up. The contesting cars kept well together the first few days of the race and it was not until between Buffalo and Toledo that a split came, the Fords getting into the latter city on schedule time, while the others were 4 hours late. The Fords led into Chicago Saturday night and made St. Louis from the Windy City in 23 hours. At St. Louis the schedule was dropped and from now on it is a free-for-all. So far nothing has been heard of the Stearns.

Mankato Still On the Map

Minneapolis, Minn., June 5—From present indications it looks as if the Glidden route between Minneapolis and Omaha would not be changed. This is thought to be the case because of the official announcement coming from the New York headquarters of the A. A. A., to the effect that the run from Minneapolis to Omaha will take 3 days. This is of considerable interest to Minnesota motorists because, if a change in the route were made, as was intimated shortly after the pathfinding trip was concluded, it would eliminate Mankato from the route of the tour and this would mean a great disappointment to one of the livest motoring towns in the entire state. No further news of the change having been received, Mankato is going ahead preparing to entertain the Gliddenites over night as originally planned.

Hartford Outing Postponed

Hartford, Conn., June 5—The annual orphans' day outing of the Automobile Club of Hartford has been indefinitely postponed because of the rainy weather. A good response to the call for cars was made and about 200 children had been provided for. One hundred children from the Hartford orphan asylum and as many more were to have taken in the event as representatives of the Charity Organization Society. Laurel park was to have been the scene of festivities, where the committee had made elaborate arrangements for the reception of the juveniles.

KOKOMO HAS ANOTHER ANNIVERSARY MEET

MISS KATRINA FERTIG IN PREMIER, A WINNER AT KOKOMO

KOKOMO, IND., June 3—Once every year the people of Kokomo invite their friends from neighboring cities and towns and advertise the fact that they appreciate what the motor car industry has done to build up the city. The day is given over to motor cars, all other vehicles are barred from one or two principal streets and the motor car is put through all sorts of stunts. The annual celebration was held yesterday and marked the sixteenth anniversary of the completion of the first motor car by Elwood Haynes. Incidentally it marked the birth of the motor car industry in Indiana, for the first gasoline car was built in Kokomo. Now there are something like thirty factories in the state.

There were many who attended the celebration yesterday who remembered the first crude little car turned out by Mr. Haynes, and which is now in the Smithsonian institute at Washington, D. C. Many remembered how he had been made the subject of jests and how he had slipped out on a country road to make his tests. But the little car ran. The experiments by Mr. Haynes led to the organization of the Haynes-Apperson Co., which a few years ago was dissolved. Now there are two big concerns manufacturing cars, the Haynes Automobile Co. and Apperson Brothers Automobile Co., one of the largest rubber plants in the country and a company manufacturing motor accessories in Kokomo, giving employment to several hundreds of people.

Kokomo's invitation to help it celebrate was accepted by delegations from Wabash, Peru, Logansport, Frankfort, Elwood, Marion, Union City and Indianapolis as well as by motorists from smaller surrounding towns. Crawfordsville had the largest out-of-town delegation, with fifty people in a dozen cars. At the head of the Crawfordsville delegation were Clifford Peterson, of the Crawfordsville Review; C. A. Bowers, of the Crawfordsville Journal; Edward Hanna and Fred Turner, who were boosting the motor car celebration to be held in their city on next Wednesday.

Early in the morning the band employed by the merchants of the city took a position on the courthouse square and gave a band concert. Following this were a number of events, principally novelty races. The big event of the day was the parade during the afternoon in which something more than 200 cars participated. The program for the day was arranged by the Kokomo Automobile Club, the results being as follows:

Slow race around court house square—White, Frank Fisher, Union City, won; time, 4:32½. Haynes, Robert Murden, Kokomo, second; time, 2:55.

Running backwards around court house square—Apperson, Nelson McLain, Kokomo, won; time, :40¾. Haynes, Loring Wagoner, Kokomo, second; time, :43.

Egg race—Apperson, Nelson McLain won; time, :17¾. Haynes, George Davis, second; time, :19¼.

Balancing contest—Haynes Hiker, Ned Ruddell, Kokomo, won; time, 2:15. No second; all others failed.

Potato race—Haynes, Ned Ruddell won; time, :20¾. No second; others did not score.

Women's ½-mile race—Premier, Katrina Fertig, Indianapolis, won; time, :55¼. Haynes, Agnes Davis, Kokomo, second; time, 1:04½.

Half-mile, 30-horsepower and under—Haynes, Jr., no transmission; Frank Sweigert, and Apperson, Nelson McLain, tied at :46¼. Haynes, Ned Ruddell, third; time, :55.

Half-mile, 40-horsepower and under—Apperson, Nelson McLain, won; time, :44. Haynes, Mr. Cook, second; time, :44¾.

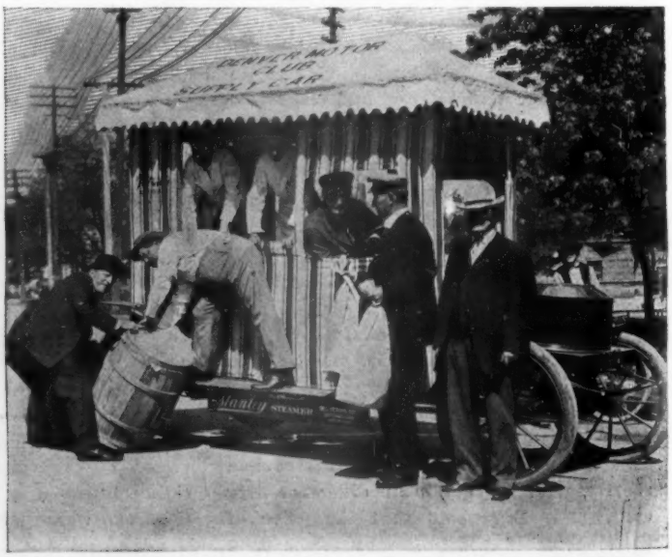
Half-mile, for Haynes test cars—Haynes, Robert Murden, won; time, :47¼. Haynes, Loring Wagoner, second; time, :48.

Half-mile, for Apperson test cars—Apperson, Edgar Apperson, won; time, :50 1-5. Apperson, Nelson McLain, second; time, :50¼.

Half-mile, women's race, flying start—Premier, Katrina Fertig, Indianapolis, won; time, :43. Haynes, Agnes Davis, Kokomo, second; time, :51¾.

Half-mile, speed exhibitions—Apperson, Nelson McLain; time, :33. Haynes, Frank Sweigert; time, :34¼. Haynes, Loring Wagoner; time, :37. Haynes, K. Blacklidge; time, :37½. Apperson, Herbert Lytle; time, :40¼. Haynes, Ned Ruddell; time, :45½. Apperson, Nelson McLain; time, :47.

A TOUCH OF COLOR



DENVER'S ORPHANS' DAY CELEBRATION

TAKING ON SUPPLIES

DENVER ROYALLY ENTERTAINS THE ORPHANS

DENVER, COLO., June 5—The members of the Denver Motor Club displayed the sentimental side of their nature today when they turned out to observe orphans' day. There were 187 motor cars in the parade and nearly 800 children enjoyed the ride of 30 miles over the boulevards of Denver. The parade was divided into ten sections, each section taking the children from one institution. President Ralph W. Smith had charge of the colored children, twenty in number. He was assisted by Dr. J. Nicoll Vroom, whose twins went to sleep, and by G. A. Blanchard, who carried the biggest load. The supply car, a Stanley steamer with a canvas house mounted on the chassis, was filled with popcorn, candy and pretty girls, with George Hering at the wheel. Ira B. Humphreys decorated his mountain-hunting wagon and hitched it behind his Apperson car, carrying twenty-one children in this trailer. The parade formed at the Denver Motor Club and went through the downtown streets and then to City park, where a bevy of young women under the superintendence of Miss Bessie Allen, passed out lemonade and cookies. Garguilo's band gave a special concert at the park and a bouquet of flowers was given to each youngster. The parade then returned to the clubhouse by another route, and at 5 o'clock disbanded and returned the children to their homes.

DETROIT'S PARADE CIRCLING BELLE ISLE

Detroit's Orphans' Day

Detroit, Mich., June 7—Orphans' day was celebrated in Detroit on Friday last for the first time in a systematic manner. The affair was in the hands of the Automobile Club of Detroit, Stanley Brooks and a commitee of which he was the chairman having been at work for some time on the details. Nearly 600 children partook of the hospitality of the club, members of which, driving their own cars, formed the greater part of the procession, though accommodations for 100 children were furnished by the Detroit Automobile Dealers' Association, and a large number of unaffiliated motorists helped materially. The children were picked up by details of cars from the various homes of the city and the parade mobilized at the approach to the Belle Isle bridge. The line of march led around Detroit's famous pleasure ground and down the middle, thence back across the bridge and out Jefferson avenue, the return trip being along Mack road. The distance was about 30 miles and a jolly party partook of a luncheon at the expense of the club, on the return to the business district of the city.

Big Turnout In Cincinnati

Cincinnati, O., June 7—The Cincinnati Automobile Club entertained the orphans of Cincinnati Friday by taking them out for a run about the city and to each of the big parks and amusement resorts. Each institution caring for orphan children was visited by members of the club with Dr. C. L. Bonifield directing and the tots taken into the big machines and whirled about the city. The parade Burnet Woods, one of the city's largest parks, and a band concert was another feature of the entertainment there. Later in the day the run was made to Chester park, and here through the club's interest in the children, everything was made free to them. Police Chief Paul M. Milliken, with a squad of police, acted as an escort and several cars were equipped for relief purposes, but happily everything passed off without accident. This is the best demonstration yet made by Cincinnati in the way of entertaining the orphans and so everyone connected with it is happy.

TRAILER THAT CARRIED TWENTY

CLUB SUPPLY WAGON

DENVER'S ORPHANS' DAY CELEBRATION

COAST HAS ITS 24-HOUR ENDURANCE RUN

San Francisco's 24—Mitchell Checks in at a Control

SAN FRANCISCO, CAL., June 2—The second annual 24-hour endurance run under the management of the Automobile Dealers' Association of Northern California was held Sunday and Monday in Alameda county, across the bay from San Francisco. Of the sixteen cars entered and started in the contest only five succeeded in coming through with perfect scores. These were the 45-horsepower Acme, the 40-45-horsepower Inter-State, the seven-passenger Mitchell 40, the Velie 30 and the 1910 Autocar 25.

The contest this year was far more strenuous than last year. Last season a dozen or more cars made perfect scores in the long grind and when arrangements were being made for the present test, there was a general demand for something more strenuous. The contests committee consequently lengthened out the course to 54½ miles, which had to be covered twelve times by the contesting cars. The course was over the San Leandro triangle, with a goodly slice of boulevard added on which fast work might be done. The greater part of the course was in perfect condition, but there were enough bad places to make things interesting for those cars that dropped behind and were then compelled to speed up. Worst of all was a stretch of a few hundred yards at Hayward's that, for badness could not be beaten in a week's search. Alameda county is famous among motorists for its magnificently-kept roads, but there is said to be some litigation over this particular stretch and as a consequence nothing is ever done with it. A friendly sign bears the inscription, "This Road Impassable for Motor Cars," which is almost literally true. It afforded a nice little test of the men at the wheel during the hours of darkness.

Had to Go Twelve Laps

The cars were required to make twelve circuits of the 54½-mile course in the 24 hours. At the end of the twelfth hour they were required to be on time within a leeway of 3 minutes, and the same was required of them at the completion of the twenty-fourth hour. Outside of this there were no restrictions as to their speed. They were not allowed to stop their motors except in the San Leandro control for any cause except to make tire repairs. The majority of the cars started out right from the start to build up for themselves a good leeway of time. Realizing that if they had tire or other trouble near the end of the race they would forfeit a clean score, they sought to lay up plenty of time to make such repairs as might be necessary. On pieces of the boulevard traveling at a mile a minute or better was not uncommon.

Eight Cars Finish

Eight of the sixteen cars that started in the endurance run finished officially. The first perfect-score car to come in was No. 6, the Velie, and its success drew from the crowd assembled at the San Leandro control warm applause. The next perfect-score car was No. 9, a big seven-passenger Mitchell touring car. This was the first appearance of the seven-passenger car in a contest in northern California and just to show his confidence, Manager Hunter kept the machine filled up with six or seven passengers during the entire 24 hours. He had the satisfaction of seeing it come in with a clean score. A smaller Mitchell lost a perfect score by a narrow margin. It made its control on perfect time during the 24 hours, but was penalized 22 points for spark plug adjustments on the road. Curiously enough, it believed that the observer himself was responsible for this trouble, although no such claim was put forward by the Mitchell men. A wire connecting with the spark plug was broken apparently by the foot of one of the pasesngers in the front seats and its position on the dash indicates that the mishap must have been due to a slip of an observer's foot.

Third in the perfect-score list was the Autocar tourabout, first in the 1910 models to reach the coast. Hour after hour the little car reeled off its laps, completing the 654 miles without a hitch. The success of the Inter-State also was of interest. At the wheel was "Slim" Murray, who never left the wheel of the car during the entire 24 hours.

The fifth perfect score was made by the Acme. This was the same car that was driven in the Santa Rosa road race 3 weeks ago, when after going 17 miles on a rim it succeeded in taking fourth place. The big six-cylinder machine was run very closely to schedule. It left San Leandro exactly at 3:10 p. m. Sunday afternoon, finished its sixth lap at 3:10:04 the following morning, and concluded the twelfth lap at 3:10:02 Monday afternoon.

At Memphis—Fred M. White and Perfect-Score Cadillac

TWENTY CARS COMPETE IN MEMPHIS TEST

Probably the toughest piece of luck of the day fell to the Studebaker cars. One of these, a big seven-passenger 40-horsepower machine, was entered by a private owner, and driven by his chauffeur. His chances for success appear to have been nil from the start, for nobody seems to have thought to see that there was sufficient water in the radiator to make even one round of the course. As a consequence the engine overheated and the car was soon out of the running. A Studebaker-Garford made a perfect score in the matter of time, but its engine stalled on a hill and it was penalized 3 points. The trouble seems to have been with the gasoline feed supply which did not come properly. As soon as the impurities were through the car went forward with a jump, and the Studebaker people hold it as evidence that the gasoline supply was not as clean as it should have been. The E-M-F, like its big Studebaker brother, had a perfect score in the matter of time, but it also had trouble with its gasoline. The driver laid before the judges several small pieces of rubber which he said he had taken from the carbureter, claiming that they had come originally from the rubber hose used at the official gasoline supply tank. The judges would not allow the protest, holding that there was no evidence that the impurities had not been taken in elsewhere, and that the driver should have provided himself with a strainer, anyhow.

Another car that had trouble with its gasoline was the Apperson, driven by President Max Rosenfeld, of the dealers' association. The Apperson was sent away No. 1 in the contest. Up to the very last lap it maintained a perfect score. Then the gasoline feed pipe clogged up and the car was hung up on the road. When the gasoline feed pipe was cleaned out there was no further trouble and the car finished the lap. Summaries:

San Francisco's 24—Velie at the Starting Line

Car	H.P.	No. Pass.	Score
1—Apperson	30	4	Out
2—Buick	40	4	Out
3—Mitchell	20	2	22 points, spark plug
4—E-M-F	30	4	4 points, carbureter
5—Winton	48	5	Out
6—Velie	30	3	Perfect
7—Studebaker ...	30	5	3 points, stalled engine
8—Buick	20	2	Punctures
9—Mitchell	40	6	Perfect
10—Autocar	25	4	Perfect
11—Auburn	30	3	Broke fan
12—Durocar	..	2	Oiler froze
13—Speedwell	40	2	Carbureter
14—Interstate	40	2	Perfect
15—Acme	45	2	Perfect
16—Studebaker ...	40	6	Dry radiator

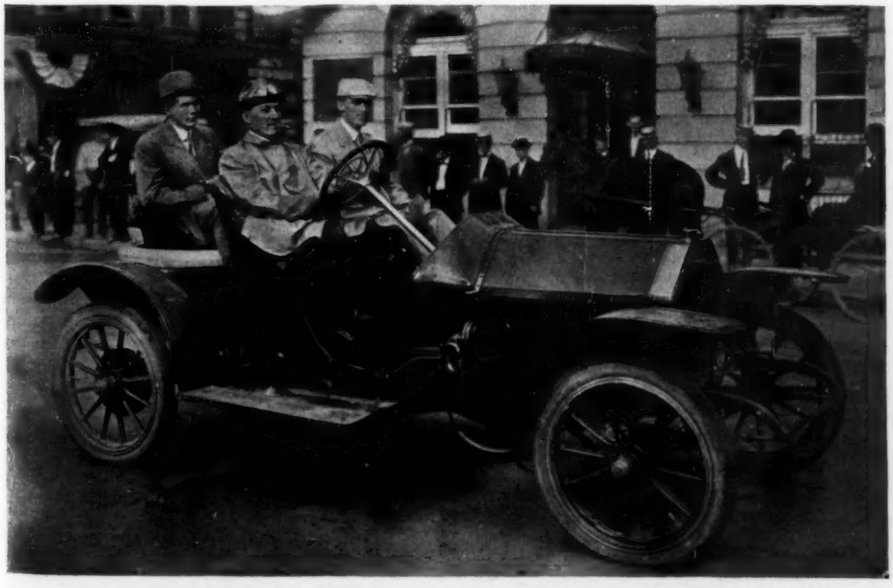
MEMPHIANS HOLDS A RUN

Memphis, Tenn., June 4—Of the twenty cars that started this morning in the second annual endurance contest of the Memphis Automobile Dealers' Association over the 107½-mile cross-country run, only two were awarded perfect scores. Jerome P. Parker piloting an Overland runabout and Fred M. White in a Cadillac finished without a blemish or scratch on their cars, and on time. The route was over the best roads in Shelby county, which were in almost perfect condition, and the contest resulted in more of a race than an endurance test. With the exception of about 20 miles of dirt roads, all of the travel was on good pike. Few obstacles or obstructions of any kind or hills were encountered and the going was comparatively easy.

The only features were the good time made by several of the cars, as the distances between the controls or checking stations in several instances forced the drivers to go as good as a 40 or 45-miles-an-hour clip.

Although the only perfect scores were awarded the Overland and Cadillac, the most remarkable run was made by a new 40-horsepower Premier driven by M. Cerf. Before starting the Premier had not run 10 miles. Its only penalty was a crack in the glass demonstrating hood, for which it was penalized 5 points. An Overland runabout which returned with a loose mud guard, was the only other car with the exception of the winners, who returned with perfect time cards. Two high-wheeled Reliable Daytons, a Mitchell runabout and a Cadillac model K dropped out before half the journey. The entire run was made by each car without a mishap, barring the minor accidents which spoiled their chances of perfect scores. The following list gives the cars, drivers and penalties, if any:

Overland, J. P. Parker, perfect.
Cadillac 30, F. M. White, Jr., perfect.
Overland, E. A. Guilfogle, 3 points.
Cadillac 30, H. E. Randle, 3 points.
Premier, M. Cerf, 5 points.
Overland, J. B. Black, 5 points.
Ford, T. W. Bruce, 8 points.
Premier, J. E. Lipsky, 14 points.
Premier, W. R. Gilbert, 15 points.
Elmore, H. Hazley, 10 points.
Reo, C. R. Edmunds, 15 points.
Cadillac 30, J. M. Ross, 28 points.
Cadillac, T. E. Mercer, 43 points.
Franklin 30, A. H. Horsey, 54 points.
Studebaker, W. R. McDonald, 56 points.
Reo runabout, Dr. B. Stanley, 59 points.
Two high-wheeled Reliable-Daytons, a Mitchell runabout and Cadillac model K dropped out.



At Memphis—Jerome Parker's Perfect-Score Overland

ENGLAND FEELS EFFECTS OF THE BUDGET

LONDON, May 26—The effects of Lloyd-George's anti-motor budget are already being felt to some extent as apart from a marked falling off in orders since its promulgation reported by nearly all the manufacturers of the larger and more powerful type of car, the importers and retailers have already advanced their prices for gasoline and what was a week or so ago selling for 20 cents a gallon is now standing at from 29 cents to 37 cents. For some time past the principal gasoline importers have been selling spirit at a price that left practically no margin of profit to themselves, in fact, it was purely a cut-throat campaign that they entered upon; and they have seized the opportunity of clapping on to the extra tax a heavy impost on their own account so as to make up for lost opportunity in the past.

It is feared that unless the house of lords throws out the entire finance bill and appeals to the country with a general election there is little hope of the gasoline tax being remitted or even reduced, as this clause in the bill has already passed the house of commons without necessitating a division being taken.

Adverse Criticism Heard

The general behavior toward the tax question of the three great British motor institutions, the R. A. C., the Motor Union and the Automobile Association, is calling forth a good deal of adverse comment, since they show no signs of meeting on a common ground to defend a common cause. One or two of the provincial clubs affiliated to one or other of these bodies have even gone so far in showing their disapproval as to declare that they will refuse to be affiliated to any of these bodies unless they take steps to join forces and oppose the taxation scheme with the strength that only unity can possess.

The total levy which the chancellor of the exchequer expects to raise from the motor imposts is some $3,750,000, of which it is anticipated that $2,050,000 will accrue from the horsepower tax, while $1,700,000 is expected from gasoline.

R. A. C. Rating Basis Used

As regards the first, the estimate, on the absurd R. A. C. rating basis, is probably fairly correct, the tax being as follows: Under 6½-horsepower, $10; under 12-horsepower, $15; under 16-horsepower, $20; under 26-horsepower, $30; under 33-horsepower, $40; under 40-horsepower, $50; under 60-horsepower, $100; over 60-horsepower, $200. The idea of stepping off the horsepower in this fashion is manifestly the acme of injustice, as whereas a grand prix four-cylinder car of 59.6-horsepower, R. A. C. rating, will pay $100, a six-cylinder touring car of 61-horsepower, R. A. C., will pay at the rate of over $50 per horsepower for the small amount it exceeds the probably faster and certainly more road-harming vehicle. Furthermore, this tax is payable every time the car changes hands.

There will also be serious difficulties in the way of collecting the impost, for unless the manufacturer's declaration of horsepower be accepted as correct, every owner will be obliged to lay bare his cylinders for measurement. In this connection it is worth note that after a year's wear the cylinders of a grand prix four-cylinder car will in all probability be of a size that will add more than half a horsepower to the R. A. C. rating, hence for the second year of running it will be obliged to come into the "over 60-horsepower class," and will pay double its previous tax. Accordingly it is unlikely that the stepped up scale can pass into law as representation will be made for a tax—if any—per unit horsepower. However, as indicated above, unless the lords send the bill to the country, the present text will become an act.

As regards the estimated gasoline levy of $1,200,000, this is likely to be far too optimistic an estimate, as if motorists do not turn to paraffin for fuel they certainly will to benzol which, with a little carbureter adjustment, makes a good substitute at 12 cents a gallon, at which price it can be obtained from any large gas works. Its great disadvantage is that the smell of the exhaust is sulphurous and awful, but this will hardly weigh heavily with a class of people who are anxious to show the country how disgusted they are with the government's proposals. Benzols have been found to have no ill-effect on the motor of a car.

Taxicab Drivers Protest

The drivers of taxicabs, who pay for the gasoline they use out of their own pockets, are presenting a petition to parliament for a reduction of the tax in their case, as the increased cost of fuel will bear exceedingly hard upon them.

The only sop that has been thrown to the poor motorist is the fact that a certain portion of the taxes he must pay will go to a central road authority, who will dispense the money for the improvement of highways. The most, however, that this authority is likely to have to administer is $2,500,000, although it is more likely to be considerably less. Out of this sum at least half of it would be required for dust prevention, while the remainder would be probably applied to properly paving with tarred macadam the roads around the principal towns and in the villages on the main roads.

In this connection it is worthy of note that no tax has been imposed on traction-engines, which probably ruin the roads much more than 1,000 times their number of cars.

Owing to the ridiculous decision of the chief of police of London to enforce a regulation that taxicabs must carry a recording device which will ring a bell when the vehicle exceeds 20 miles per hour, a good deal of prominence has been given to the Roper speed alarms which when set to any speed automatically prevents the car from exceeding that limit. The result is that all the pleasure of driving is lost and the car robbed of a great portion of its safety, since with the instrument in position it is impossible to spurt out of trouble. Another foolish invention is a patent lamp in part of which is a shutter worked by gearing from the road wheel of a car, so that the lamp is darkened, say, four times a furlong. Thus the car's speed will be rendered easy of calculation. Motoring in England, if such a device is made compulsory, will have lost its charm.

BELGIAN SPEED TRIALS

Antwerp, May 20—The feature of today's speed trials on the Grawenwezel road, a few miles out of this city, was the withdrawal by Manager de Jong, of the Minerva company, of all the cars entered by this house. Manager de Jong complained that several cars had been classed into the touring car heats whereas their bodies did not conform to the regulations. As a consequence the cars complained of—a Vivinius and an F. N.—were placed into the racing car class. Then, just to show his disapproval at the management of the whole thing, de Jong had all of his cars—there were four of them—returned to the factory and thus no Minerva cars were seen in the trials. The trials were held over a distance of 1 kilometer from a standing start, and 500 meters from a flying start. Nothing really startling in the way of speed was recorded. Among the touring cars the Nagant was by far the speediest, its time for the kilometer being :48⅘ and for the 500 meters :19⅗. A Germain was second in 55 and 22 seconds respectively. In the racing car class there were only three starters and Fischer in the Vivinius made the best times, going the kilometer in :47⅗ and the 500 meters in :19⅘. In a special trial after the regular events, Fischer did much better. He went the 500 meters in :17⅗ and 1 kilometer in :45⅗.

CLEVELAND CLIMB POSTPONED

Cleveland, O., June 7—Rain coming late Friday night last week caused a postponement of the annual Cleveland Automobile Club hill-climb until Wednesday, June 9, of this week. With thirty entries in hand the chances were bright for a good event, but a storm at the last moment put the roads in bad shape. The Stoddard-Dayton cars, with Miller and Tuttle, were forced to leave Saturday night for Chicago. It is thought, however, that the postponement will allow many other cars a chance to enter, and that the list will be swelled by at least ten more machines.

GOUX WINS THE CATALUNYA CUP IN SPAIN

BARCELONA, Spain, May 21—Goux, driving a two-cylinder Lion-Peugeot, having 3.1 inches bore and 7.87 inches stroke, won the second annual race for the Catalunya cup for voitureetes, which was held yesterday a few miles from this city upon a 17.5-mile circuit. The Lion covered the course of 226.4 miles in 6 hours 18 minutes 6 seconds, averaging 36 miles an hour. The single-cylinder Sizaire-Naudin was second in 7 hours 37 minutes 46 seconds, and preceded the little Werner by less than 60 seconds. The fourth and only other car to finish the race was the Hispano-Suiza, which came in about 20 minutes later.

Few road races in recent years in any part of Europe have been as interesting. The fact that there were no Nazzaros, Lancias or other opera stars of the motor car racing stables did not seem to be noticed. Even the lack of great speed was not missed and all told the race was one which the majority of onlookers would probably be willing to see over again.

It was the second road race promoted in Spain and everything went off to perfection. Grand weather, a superb organization, a large and fashionable crowd, no accidents with results fatal to men, and exciting moments galore, was the bill of the day. The Spanish sportsmen may not have been as satisfied as they had wanted to be at the showing made by the national product, but honor was saved to some extent by fourth place going to one of the three home-made cars. These Spaniards proved themselves to be fine sportsmen as they were frank in their enthusiasm at the performances of the better cars and drivers.

The winning car was a new model Lion-Peugeot and it was claimed that this was the first time it was tried out in public. The other two Lion cars are said to have been the same which started in the voiturette race in Sicily a few weeks ago. Both were one-cylinder cars with 3.9 inches bore and 9.84 inches stroke. They were entirely too powerful for the Spanish circuit, which had a large number of turns and very few stretches of level roads. Both cars were put out of the running owing to wheels breaking off. This also was the cause of the Sizaire-Naudin being out for a long time. This car also was too powerful, having a single-cylinder motor of 3.9 inches bore and 6.69 inches stroke. It also was the general opinion that the Hispano-Suiza cars were too fast for the course.

Sizaire-Naudin Breaks a Wheel

It is just possible that the Sizaire-Naudin might have been the winner had it not been for the accident in the first round which resulted in the breaking of one of its wheels. The car, after being repaired, went like a big racer, covering kilometer after kilometer at from 38 to 40 miles an hour on the hilly circuit.

Of the Spanish cars it must be said that they showed evidence of a hurry-up job to get ready for the race and that were too fast for the uneven roads. The race was run under the most favorable weather conditions. Everything went on smoothly and the organization was perfect. At 1 minute past 8 the first car, the Lion-Peugeot, driven by Giuppone, was sent away, and then followed the other ten cars at an interval of 1 minute between each, as follows: Derny, Hispano-Suiza; Pileverdie, Hispano-Suiza; Zucerelli, Hispano-Suiza; Boillot, Lion-Peugeot; Goux, Lion-Peugeot; Sizaire, Sizaire-Naudin; Demestre, Demestre; d'Avaray, Le Gui; Soyez, Werner, and Marsars, de Dion-Bouton.

At the end of the first lap—the contestants had to make thirteen laps or rounds—Goux was leading by 40 seconds, having covered the 17.4 miles in 23 minutes 48 seconds. Boillot was second and Zucerelli third. Sizaire was the victim of the first accident of the race, a wheel breaking. He restarted after repairs had been completed and before resuming the race he went to the assistance of two broken down Lion-Peugeot cars and brought them back to the maker's stand.

Boillot an Early Leader

Boillot went to the front during the second lap and was leading at its conclusion, Goux being 35 seconds slower. During this lap Derny tipped over at one of the turns, but after getting his car back on the road he restarted, no damage having been done. At the end of the third lap Goux was again in the lead, closely followed by Zucerelli. This was the lap during which Boillot came to grief, a wheel breaking and putting him out. Demestre also was stranded.

During the fourth, fifth and sixth laps there was keen interest owing to the great fight that was going on between the three first men. Zucerelli, in his Hispano-Suiza, was getting away from the others and increasing his lead so rapidly that it looked for a moment as if he would surely win. At the end of the sixth lap he was a few seconds less than 26 minutes ahead of Goux; while Derny, who had managed to get into second position during the fifth lap, dropped out, his car giving way under the speed strain.

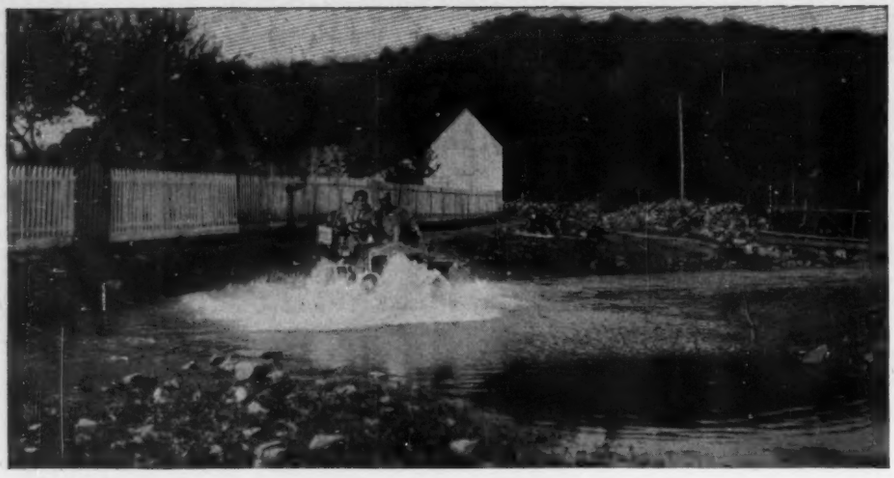
The Spanish hope went to the clouds soon after the seventh lap had started, as Zucerelli, owing to his furiously fast driving, had put his car out of the running. Although he had a lead of close to half an hour when he stopped, he could do nothing to his voiturette which was beyond the ordinary mechanical doctor's care.

From the seventh lap till the finish of the thirteenth, and thus the end of the race, Goux and his little Lion kept the lead, never being any more in danger of losing out, unless through accident. The latter part of the race was devoid of special interest excepting the effort of Sizaire to get an honorable position.

The first race for the Catalunya cup took place May 28, 1908, over the same circuit, but only nine laps, or 156.6 miles. The winner was Giuppone, in a Lion-Peugeot car. A de Dion-Bouton was second, followed by a Lion, and then came another de Dion-Bouton. Fifth, sixth and seventh were Lion cars, then came a Fouillaron and the last one was a Werner.

AUSTRIAN SMALL CAR TRIALS

Vienna, May 11—The small-car trials of the Austrian Automobile Club ended a few days ago, there being ten with clean scores out of the fourteen which started on the 3-day run, which was 626.8 miles in length. The first day's run from Vienna to Triest by way of Graz, Marburg, Cilli and Laibach, included some difficult country roads, through mountains and valleys, with successions of small steep hills and endless turns or windings. In addition to these natural difficulties the roads were muddy and slippery. From 1 to 3 hours' leeway was added, but only two cars failed to complete the day's run, namely a Piccolo and a Bock & Hollender. Those which made the run of 311 miles without the loss of a point were three Laurin-Klements, an Opel, a Peugeot, a Sizaire-Naudin, two Piccolos, two Bock & Hollenders, an Oryx, and a de Dion-Bouton. The Piccolo which dropped out was driven by Mrs. Hatschek, who had trouble with her motor, while the Bock & Hollender car had ignition troubles. On the second day the trials extended from Triest to Klagenfurt by way of Gorz, Predilpass, Travis and Dillach, the distance being 125.5 miles. All of the twelve starters made the run which was over snow-covered roads and included going over the Predilpass, where the gradient was from 18 to 20 per cent for a distance of a little less than 9 miles and then averaged from 10 to 14 per cent for a number of miles. On the third and last day the run was from Klagenfurt to Vienna, about 190.3 miles by way of Scheifling, Judenburg, Bruck and the Semmernig hill. The little four-cylinder Opel, driven by Herr Koch, was first to finish the day's run, just as he had done on the previous 2 days. Had there been a classification according to best time made the little German car would have won by a big margin, as on all 3 days the next contestant to finish was nearly an hour slower. Two Piccolo cars dropped out and the ten which completed the run with perfect score were the three Laurin-Klements, two Bock & Hollenders, an Opel, a de Dion-Bouton, an Oryx, a Sizaire-Naudin and a Peugeot. Seven of the ten cars finishing had four cylinder motors, two had two-cylinder and one had a single-cylinder.



CROSSING ONE OF THE CREEKS IN VIRGINIA

New York-Atlanta

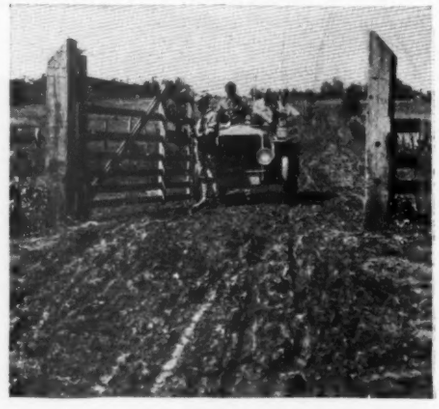
By Pathfinder

NEW YORK, June 7—It is almost impossible to overestimate the enthusiasm for good roads which has been stirred up in the southern states through the movement started by the New York Herald and Atlanta Journal. It was my good fortune to be selected to drive my White steamer as the New York Herald scout car from New York to Atlanta. Never before in my touring experience have I seen such an ovation as greeted the party throughout the 1,100-mile journey, commencing from the moment when it was started on its journey from Herald square by General Leonard Wood to the time when it was met on the outskirts of Atlanta by Governor Hoke Smith, of Georgia, and Mayor Maddox, of Atlanta, and several hundred of the leading citizens of the empire city of the south. During at least two-thirds of the journey there were escorts of from one to a dozen motor cars which came out from the various towns along the route. The garages refused to take any payment for gasoline and other supplies and when the scouts came to pay their hotel bills in the morning they found they had been anticipated by the local chambers of commerce.

LEADING INTO ANTIETAM BATTLEFIELD

It would be too much to say that the sentiment for good roads was created overnight by the enterprise of the two newspapers mentioned above. Undoubtedly the sentiment for good roads already existed, but it needed some concrete enterprise, such as a proposition to build a great highway between New York and Atlanta, to crystallize the good roads sentiment and to bring together in co-operation the various motor car clubs along the route, the principal civic organizations in the various cities and the farmers' organizations in the rural districts. If one-half of the proposed bond issues heard about materialize, there will be more money spent on the roads between New York and Atlanta in the next 6 months than has been spent in the last 6 years. In the office of the Atlanta Journal several hundred newspaper clippings relating to good roads were shown. Apparently there is hardly a newspaper published between New York and Atlanta either in a large city or in a rural community which has not undertaken to agitate the good roads question in its editorial columns. In the judgment of the writer, within 2 years the tourist may go from New York to Atlanta without any more fear of encountering severe road conditions than if he were to start for a tour through the New England states.

The route covered on the recent tour is one of two or three possible routes between New York and Atlanta. It is by no means the shortest route, but, at the present time, it probably is the best. The fact that the 1,125-mile trip was made in 11 days, despite the necessary stops for compiling road directions, for taking photographs and for the receptions along the line, will indicate to every motorist that the route is a thoroughly feasible one, even in the present state of road conditions.



ONE OF THE TOLL GATES

The route followed was: Southward to Philadelphia and then westward to Gettysburg; then southward again through the Shenandoah valley to Roanoke, Va.; then eastward to Danville. From that point it followed approximately the main line of the Southern railroad through the prosper-

FINE ROAD NEAR BERRYVILLE, W. VA.

Good Roads-Scout

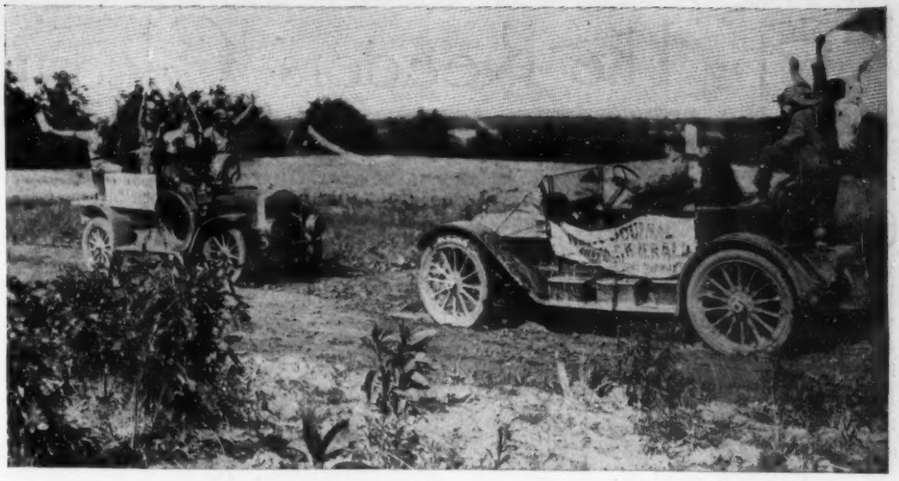
ous regions of the new south all the way to Atlanta.

Considering the route from New York to Atlanta more in detail, the road from New York to Trenton is so well known as to need no comment. Going south from Trenton most tourists go by way of Bordentown and Camden, but the scouts took a shorter route by crossing the Delaware river by the Trenton bridge into Pennsylvania, and thus avoided the ferry at Camden and the narrow east and west streets of Philadelphia.

For 25 miles west of Philadelphia the road is perfect, yet it would seem that the time has come to eliminate the toll gates from the main highway leading westward from the third largest city in the country. After leaving the toll road the road through Coatesville and Kinzer was found rather rough, but it improves again near Lancaster, when good time was made through Wrightsville and York to Abbottstown. From there to Gettysburg, a distance of 15 miles, the road is very rough and one cannot help but regret that the highway to one of the greatest places of interest in the country should be so neglected.

At Natural Bridge, Va.

On the battlefield of Gettysburg the roads were built and are maintained by the national government, and needless to say are in perfect condition, just as they are on Missionary Ridge and the other national reservations where the nation has undertaken road-building.



Pathfinding Cars Meet on Common Ground

On leaving Gettysburg, on the morning of the third day of the trip, the scouts had rather rough going for 10 or 15 miles and then they came to a good macadam road, which led through Waynesboro, Hagerstown and Shepardstown to Winchester, Va., where they came to the famous Shenandoah valley pike, over which they traveled another 95 miles to Staunton. Over more than two-thirds of the distance from Gettysburg to Staunton they paid toll at the rate of from 3 to 5 cents a mile.

The run from Staunton to Roanoke, a distance of 93 miles, was made under very severe conditions. The roads had just been plowed and were drying up from a hard rain of 2 days before. The soil was of a consistency which allowed the wheels of the car to sink in nearly to their hubs, and it was just stiff enough to make very hard pulling. Added to this, the going was mainly uphill, with the result that it took much more power to negotiate these roads than was necessary on any other part of the journey. It was on this leg of the trip, from Staunton to Roanoke, that the car went through several fords where the water was up to the level of our floor boards.

From Roanoke to Danville the scouts had what could be called fair dirt roads, and this stretch of 117 miles should offer no particular difficulties. The same may be said of the stretch between Danville and the state line between Virginia and North Carolina. It must be understood, however, that the roads in Virginia south of Staunton were not laid out with reference to the requirements of motor traffic. For example, some of the sharp turns in the road may be all right for a horse and buggy, but they are hardly suited for a machine with a 10-foot wheelbase. Then, too, the waterbreaks may be very convenient places for Dobbin to rest on his way uphill, but they surely try the temper of both passengers and car.

Near High Point, N. C.

Gathering of the Motor Clans

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

IDEAS ON ROTARY VALVES

CHICAGO—Editor Motor Age—Since the advent of the Knight motor, in which poppet valves are not used, I have been considerably interested in the matter of using rotary valves for cylinder heads, and see no reason why the construction as illustrated in Figs. 1, 2 and 3 cannot be used. Fig. 1 shows the general arrangement with the rotary valves R lying horizontally across the cylinder head, and well within the waterjacketed space W. In the base of these valves is a slot designed to communicate with the passage D leading to the combustion chamber C. As illustrated, the left-side valve is open permitting, should it be the intake, mixture entering through the end of the valve and through the V passage to the cylinder. The exhaust valve on the right side is closed. Fig. 2 shows the valve removed with the open end A through which enters the mixture in case of the intake, or through which the burned gases escape in case of the exhaust. The opposite end has a shaft part E forming a bearing, and also an attachment whereby the valve is rocked back and forth to open and close it. Fig. 3 is the top view of the cylinder showing the valves lying in place with the opening X for intake and exhaust gases. The valves are rocked from the camshaft, there being an offset on the end of the valve rod E, Fig. 2.—H. S. Vrooman.

MEANING OF F. I. A. T.

Canton, N. Y.—Editor Motor Age—Will Motor Age tell me if the B. L. M. is still manufactured, and if so, where and by whom? Also tell me what the letters F. I. A. T. stand for?—Reader.

The B. L. M. is not being manufactured. The letters F. I. A. T. stand for Fiat. F is for Fabbrica, I for Italiana, A for Automobili, and T for Torino. Translated this means the Italian Automobile Manufacturer of Turin, Italy.

PACKARD RADIATORS

New York—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, explain the construction of the Packard radiator, its effect on the motor, and the governor in particular? It is surprising to know the number of people driving Packard cars who do not understand the system.—J. R. Switzer.

The radiator of a Packard car consists of a large number of small square copper tubes, the ends of which are expanded. By placing these side by side a solid front and back is obtained, but between the tubes there are small spaces through which the water flows and is divided into numberless small streams. The tubes are so placed that the water coming down between two tubes strikes the center of the tube below and is again divided into two streams, giving both a vertical and a lateral circulation. Its object is to reduce the heat of the circulating water which prevents the motor from overheating. The radiator has no effect on the governor. It is assumed that you mean the effect of the water-circulation on the governor. The governor is of the regular hydraulic type, with special modifications, and consists of a circular chamber divided in the middle by a flexible diaphragm, one side being filled with water and connected with the pump and with the cylinders. On the side of the diaphragm, opposite the water, is a large piston, the stem of which projects through the guide and bearing and is connected with the throttle. As the motor is speeded up, the velocity of the water from the pump is increased, and this acts against the diaphragm, moving the piston, and tending to close the throttle. As the motor speed decreases, the water pressure is lessened with a tendency to open the throttle. Left to itself, the governor will hold the motor very closely and uniformly to any speed for which the throttle may be set by the sector lever on the steering wheel. The action of the governor may, however, be neutralized by the accelerator, by which the driver can produce an immediate and complete opening of the throttle.

FROM FLORIDA TO CHICAGO

Oakland, Fla.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the best route to take to Chicago. Would Motor Age advise shipping car direct to New York, or is there a good route from Savannah or Richmond. It is my intention to ship my car from Sanford, Fla., via boat to one of these ports, but do not know which route would have the better roads leading to Chicago.—A Regular Reader.

From a standpoint of roads the best policy would be to ship the car to New York and drive overland. There is not a good road from Savannah to Richmond. It is possible, however, to get fair driving from Savannah, to Atlanta, to Chattanooga, to Nashville, to Louisville, Cincinnati, Indianapolis, South Bend and Chicago. From Savannah to Macon it is 186 miles, the route being through Blichton, Stillson, Statesboro, Summit, Graymont, Swainsboro, Rixville, Dublin and Jeffersonville. From Macon to Atlanta is 102 miles, the course lying through Forsyth and Griffin. From Atlanta to Chattanooga is 142 miles by way of Marietta, Cartersville, Rome, LaFayette. From Chattanooga to Nashville, measures 247 miles and the course lies through the following points: Bridgeport, Scottsboro, Huntsville, Fayetteville, Shelbyville and Murfreesboro. From Nashville to Mammoth Cave by way of Goodletsville and Bowling Green, is 103 miles. From Cave City to Louisville through Bearwallow, Uno, Canmer, Magnolia, Buffalo, New Haven and Bardstown, is 116 miles. From Louisville to Lexington 80 miles, through Middletown, Shelbyville and Frankfort. From Lexington to Cincinnati through Georgetown, Corinth, Williamstown and Covington, is 88 miles. The route from Cincinnati to Indianapolis is over good roads and from Indianapolis to Chicago the roads are good in any season of the year.

POSITION OF MAGNETO

Milwaukee, Wis.—Editor Motor Age—As a reader of this valuable paper, I would like to have Motor Age answer the following questions through the Readers' Clearing House: 1—Would Motor Age advise me to have the magneto on a four-cylinder, two-cycle valveless engine on the left side, that is, on the same side with the intake and exhaust pipes? Wouldn't it be better to have the intake and exhaust side of the engine on the right side of the car on account of easier adjusting for speed control? 2—What power should I get from a four-cylinder two-cycle three-port valveless motor, with a 4½-inch bore and stroke, and cold compression of 65 pounds per cylinder? 3—What is the highest speed I can get? 4—What is the speed ratio for a ¾-inch gear pump and what ratio for a force feed oiler? Is half-speed all right? What speed for a 16 by 6 fan blade? Is 1 by 3 all right?—O. W. Brown.

1—It is advisable to have the magneto as free as possible. It should not be on the intake side because of the danger of fire, which has occurred in several cases due to a spark on the magneto igniting the explosive vapor around the carbureter. It is better to have it away from the exhaust pipe so that the high-tension wires are never unnecessarily exposed to heat.

2—It is problematic the power you will get from a 4½-inch two-cycle motor, as this entirely depends upon the design. One manufacturer claims 32 horsepower from this size, which is practically the same as from a four-cycle of the same size at the A. L. A. M. rating. Another manufacturer with the same size cylinders rates at 44 horsepower. Motor Age has never seen two-cycle motors on the block test, and cannot give the most efficient speed in crankshaft revolutions per minute, nor the highest possible speed. In practice some two-cycle motors begin four-cycling above a certain crankshaft speed, whereas others do not.

SPARK-PLUG TROUBLE

Massend, Ia.—Editor Motor Age—Will Motor Age tell me where I should look for the trouble in a D. O. 5 by 5-inch motor car engine, when the rear cylinder will not fire a charge, then will pick up and run fine and not miss a shot for 8 or 10 miles, then stop all at once and not fire for some time again, which takes about one spark plug every 15 miles? I have tried several different kinds, but they all have failed. The engine is water-cooled and does not get too hot. The missing sometimes alternates between one cylinder and the other. I would like to know how to remedy the trouble.—H. L. C.

The symptoms you give are somewhat distracting and rather incomplete. You say the motor does not heat up, but still it takes one spark plug about every 15 miles. How are these plugs affected? Is the porcelain insulation cracked, or are the electrodes, or points, destroyed? A cracked porcelain may result from excessive heat from the cylinder, a tendency on the part of the current to pierce the insulation instead of jumping the gap which may be too large; the plug may be screwed into the cylinder too tightly, or the packing gland drawn down too hard. The points of a plug may be destroyed by excessive heat caused by the use of too strong a current, an over-rich mixture, and poor scavenging of the exhaust gases on account of a worn or loose cam. Then again, if the plug is located opposite the valve, it may be that the points of the plug are struck by the valve as it is raised. It is possible that there is a short circuit in the secondary wire. The insulation may be worn off so that at times the wire may lay against the frame or some metal portion of the engine. Probably there is a leak in the waterjacket, admitting a little water into the cylinder; in this case the water would accumulate between the points of the plug and short-circuit it. If you could give a little more data, such as the make of the car, kind of coil and current supply, the time at which the trouble started and any incidents connected therewith, a more definite reply might be given.

MOTOR CYCLE PUBLICATIONS

Charlotte, Mich.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the address of some good motor cycle journal?—A Subscriber.

There are a number of motor car publications which devote a part of their space to the motor cycle industry, while the Motor Cycle Illustrated and Bicycle World and Motor Cycle Review, both of New York city, are almost entirely devoted to the motor cycle interests.

USE OF THE CUT-OUT

Oneida, Ia.—Editor Motor Age—Kindly state through the Readers' Clearing House what proportionate increase of power I may expect to get, if any, by putting a cut-out on my two-cylinder run about with cylinder sizes 4½ by 4 inches. Why are nearly all large cars equipped with cut-out and small cars not?—Reader.

The amount of power gained by using a cut-out will depend on the efficiency of your present muffler. With many of the mufflers used today it is possible to get from 3 to 5 miles per hour faster with the muffler cut-out open. Where a particularly efficient muffler is used and there is little back pressure on the motor, the power gained by using the cut-out is proportionately less. It is customary in testing the mufflers to determine the amount of back pressure on the motor to take the crankshaft speed in revolutions per minute without the muffler, and then note this speed with the muffler in use. When the muffler is added the crankshaft revolutions are reduced and from this the efficiency of the muffler is calculated.

AMERICAN vs. FOREIGN METHODS

Chicago—Editor Motor Age—It may seem a paradoxical assertion but America today is gradually leading the way in the manufacture of the French motor car. The suggestion appears to have a diametrically opposed meaning, but when thoroughly analyzed it is found to be true in many ways. There are perfectly natural reasons for the assertion. First, the old saying that time changes all things, applies with great force here, and when we say it we cover a multitude of points when the United States is involved. Second, the versatility, adaptability and the faculty of assimilation of the American is probably more pronounced than that of all other countrymen combined. Third, we demolish precedent with scorn. With such forces paramount in our systems, working at high pressure all the time like a corked-up cylinder of nitro, it is easy to learn the reason for the remark.

Taking time as the first point to discuss, it is a fact that we stand alone in the matter of work done in the shortest possible time consistent with quality. When I say quality I mean to cover the various grades, but for the sake of argument now I will refer to the best grade made which will mean as good as can be made anywhere. The article will be made to a point of accuracy that is in keeping with the perfect use of the article, and in substance its formula will be the equal of any other formula, and most times better. If, perchance, the material is not as good as can be produced elsewhere it means that the discovery acts as a fillip to the great spirit to excel and that quick action will inevitably follow, such as no board room palaver can delay and no

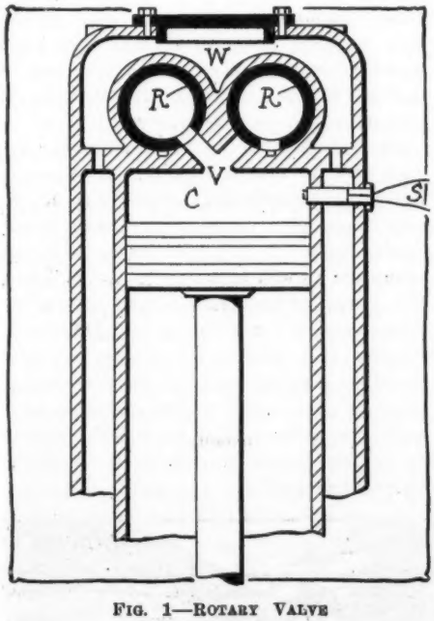


FIG. 1—ROTARY VALVE

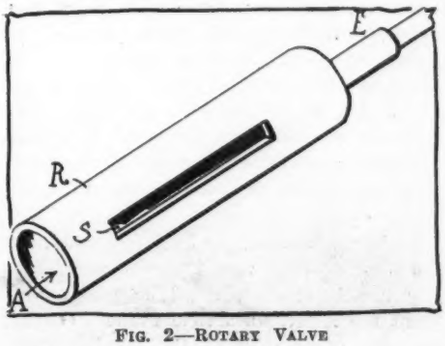


FIG. 2—ROTARY VALVE

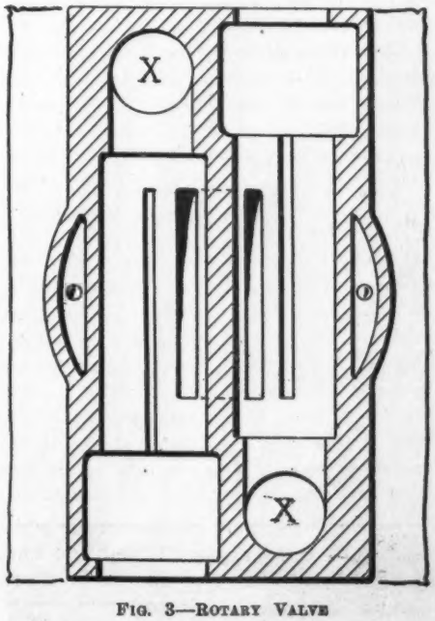
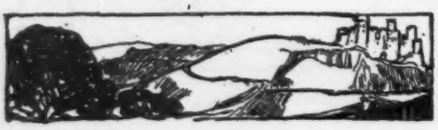


FIG. 3—ROTARY VALVE

precedent can hinder. While the continent of Europe is not given to the fogy ideas and stagnate notions of ancient practices to the same extent as Great Britain, still in both France and Germany one will find that new methods are looked upon with a sort of dread, or an element of danger, which should be nursed for a time to develop. This process of delay—which means fear of setting precedents—is an element of retention which Europe never will be able to shake off, and in every case where America commences the manufacture of an article after Europe, this drawback always will allow it to catch up in the same manner as was the case of the motor car of French origin. Time cannot be bottled in a nursery, and the fear of setting precedents must be a factor in reducing pace, or cutting down the average in the long race for supremacy. Here in our country work is a pleasure, and we work as if the next hour would be our last. And it is not a breathless existence either as has often been quoted, but simply that we take time by the forelock and continually and continuously keep at it—an indefatigable pleasure that conquers time like the tides of the ocean, or the dripping of the water which wears away the stone. Time is not money in the old country, and while the general result of the effort is equal to our own, it still remains that the pace is not the pace that wins.

In this country, where the wooden nutmeg was made and the electric light was brought into existence, lives the most versatile man on the face of the globe. He is not altogether Anglo-Saxon, and not totally without Teutonic blood, but he is wholly American if we can flatter ourselves by saying so. I mean by this that he is not what the other fellow is, as it were, but a combination of all the latent forces of an earlier existence and a predominence of the new controlling it, and on that score there is room for congratulation.

This versatility is the result of the blending of the various gifts of the new artisan under more suitable conditions—under conditions of old Sol and soil, earthly expanse and freedom—all life-giving properties which imbibes the new spirit with an enthusiasm that is unknown in Great Britain or on the continent, a kind of freedom of mind and body that nourishes on thought and toil. Such a quality is quite unknown in Germany and England. A freedom of mind and action to England would mean worlds; to Germany, and even France it would create a new era in mechanics. In England the workman is told that he is not paid to think and must do only as he is told. This has been bred in him for years and years until it is a part of his system. He has no idea of creation and his fingers are tied to the one particular branch of work that his forefathers taught him. If his father was a molder, he becomes one; and if he has learned to be a lathe hand, he teaches his son likewise—he never becomes a driller or a planer, but always a turner. Usually his apprenticeship lasts many years and is bought by money and hard work without pay—under contract which is signed and sealed by both parent and employer. He becomes proficient only at the expiration of the contract, at which time his salary commences.



In Germany it is no better, and with it the German has perpetuated the slowest existence of any of the great countries. His salary is in keeping with his speed and while his work is generally good he is wholly dependent on his superiors. He is usually a contented loafer, second only in this respect to the average Englishman. He lives on his beer and pretzel, is self-centered and his loyalty is his obedience to his iron-hand master. His mind is kept inert by his subjection and like the Englishman his standing socially is many planes below that of his master by years of pressure.

Coupling versatility with adaptability we still have better reasons why our progress is so pronounced, but the essential which appeals to me most forcibly is the power to assimilate. This power is exactly what has promulgated the force in the production of the splendid motor car which the American is turning out today. Only 3 or 4 years ago we had an exposition of freaks in the motor car line which could not have been equaled by any country in the world. Then the spirit of invention—which all along has been the mother of our souls—was with us, and we were all inventing on different lines and the patent office was reaping a harvest. Every factory had an expert and every expert had his way. Result—freaks, and many of them—but hold, friend; these freaks are today relics of the past, but what they taught to the American motor engineer will be ever green in his mind. He learned what not to do, and with his power of assimilation and his adaptability he quickly grasped the Frenchman's design, worked it up and with his usual adeptness developed it on engineering lines suitable for the conditions of his own country, in other words for the worst possible conditions—bad roads instead of good ones—with the ultimate result of success which stands before us now, a fact that will prove itself in the rapid elimination of the foreign product from this country, and the early advent of the American car in the European field. As in the early days of the bicycle, back in the '80s, the European machine held full sway, but in the '90s it was entirely superseded by the American product, and to an extent the American article found a market on the other side of the herring pond. History repeats itself and the motor car will be no exception to the rule. The American's power at the moment in the motor world is greater than that of any of his confreres, no matter to what country he may belong. He is protected by his tariff, which is a sort of fortress, and he protects himself by being a master of production. His tools and his spirit are his weapons and help make him the king pin of the situation.

The natural conditions of our vast country always have been a great element in our advance. It always will be, and is a barrier to others in many ways. Our natural surroundings breathe freedom and equality in every avenue along which paths the seed of knowledge is planted everywhere, and with the desire to learn and advance, the American is placed in a unique manner in the world of science. The Englishman often says knowledge is not heavy luggage and needs no room for storage, and it is certainly a true saying which the American uses as a sort of destroyer of idleness. As I said before, his knowledge has not been impaired by his former experiences, however subjected they might have been, but actually enhanced and in connection with the conditions of utility such as his inferior roads, his results will be found more than satisfactory when the utilitarian conditions are improved for his product, such as the uses of his products on the better European highways.

Further, the advance of the American in the motor car line has been inevitable. To produce and to produce rapidly are two different things. To produce rapidly and properly is to produce cheaply, and with all other conditions equal this means a positive market. The next year or so cannot help but bring about these expected conditions, because the archaic methods as mentioned above on the part of the European, and the indefatigable spirit of the American on the other hand must continually widen the gap in the pace towards the goal. There will have to be many new laws, and revolutionary changes in the makeup of the foreigners' manufacturing principles.

Combined with these conditions the American is also an excellent salesman, and he is what might be called a migratory bird with tendencies toward European haunts. With his winged wheels and open eyes he will make his tasks pleasures. His power of observation will always be paramount and his line of argument convincing, and when his machines are produced and ready for the markets he intends to invade, the paradox will be complete—in other words, he will be selling to Europe European cars made in America.—Berne Nadall.

Legal Lights and Side Lights

NEW CONNECTICUT MEASURE

A SUBSTITUTE for senate bill No. 118, being an act for the control of motor vehicles, has passed the senate of the Connecticut state legislature and is now before the house. It will be recalled that in the original bill provision was made for a supervisor of motor vehicles to whom would revert the control of motor vehicles and the like. The bill did not meet with favor and a new one was drawn up leaving the control of the situation with the secretary of state as heretofore and providing for the appointment of the much desired commissioner. There were other objections to the original bill which seem to have been eliminated in the measure just passed. The bill covers the situation very thoroughly and provides that all motors shall be muffled between 9 o'clock in the evening and 6 o'clock in the morning and the operator must not use a signal other than a horn, air or gas-blown whistle, or bell. This eliminates the siren proposition. Fees are as follows: For motor cycles, $1 each; for commercial vehicles regardless of horsepower, $5; for motor vehicles controlled by a liveryman, $10; for motor vehicles of less than 20 horsepower, $60; for cars of 20 horsepower and above but less than 30 horsepower, $10; for 30 horsepower and above but less than 35 horsepower, $15; above 35 horsepower and less than 40 horsepower, $20; of 40 horsepower and above, $40; for the substitution of the registration of a motor vehicle previously registered according to provisions of section 2, $2; for the registration of all motor vehicles owned or controlled by manufacturers, $100; for all cars owned by or under the control of a dealer, $20. It will be seen that considerable revenue will be derived from the sport and industry in this state from registration alone. Nonresident motorists complying with the regulations of their respective states may use the state highways for a period of not exceeding 10 days in any 1 year without complying with the Connecticut state registration provisions. Markers must be conspicuously displayed at front and rear, however. The speed proposition is as follows and interests all who operate cars, whether residents of this or other states: "No person shall operate a motor vehicle on the public highways of this state recklessly or at a rate of speed greater than is reasonable and proper, having regard to the width, traffic and use of the highway, or so as to endanger the property, life or limb of any person.

"Upon approaching any person walking in the traveled portion of any highway, or a horse or any other draft animal being led, ridden or driven therein, and in passing such person or such horse or other draft animal, the person operating a motor vehicle shall have the same under control and shall reduce its speed when reasonable care requires. If such horse or draft animal being so led, ridden, or driven, shall appear to be frightened, and if the person in charge shall signal so to do, the person operating such motor vehicle shall bring the same immediately to a stop, and if traveling in the opposite direction shall remain stationary so long as may be reasonable to allow such horse or other animal to pass, or if traveling in the same direction shall use reasonable caution in thereafter passing such horse or animal.

"If the rate of speed of a motor vehicle operated on the public highway of this state exceeds 25 miles an hour for the distance of ⅛ mile, such rate of speed shall be prima facie evidence that the person operating such motor vehicle is operating the same at a rate of speed greater than is reasonable and proper.

"If the rate of speed of a motor vehicle, excepting within the limits of an incorporated city, operated on the public highways of this state, where the operator's view of the road and traffic is obstructed, when approaching a crossing or intersecting public highway, or when traversing a bridge, or a sharp turn or steep descent, or a curve in the highway, exceeds 10 miles an hour, such a rate of speed shall be prima facie evidence that the person operating such vehicle is operating the same at a rate of speed greater than is reasonable and proper.

"If the rate of speed of a motor vehicle operated upon the public highways of this state in passing any street railway car that is stationary or about to stop, on the same side of the car on which the passengers are ordinarily received or discharged, exceeds 3 miles an hour, such a rate of speed shall be prima facie evidence that the person operating such motor vehicle is operating the same at a rate of speed greater than is reasonable and proper."

Under the new bill no one may use a car without the owner's permission, which will check joy riding. All money received from fines and fees derived are turned over to the state treasurer to be expended for highway improvement at the instance of the highway commissioner.

DANGER FOR MOTOR BILL

The motor bill framed by the committee on roads and bridges for the Massachusetts legislature has now run the gauntlet of the ways and means committee and has at last been reported to the house for action. Before it is finally passed it will undergo a thoroughly hot fire because some of the members of the legislature are not pleased with different sections of the bill. Unless the party whip is snapped and the steam roller is brought into play the bill is apt to be amended. Already the republican party has loaded upon its back two big issues that will mean a loss of votes in the fall, and there is a fear that the motor question may mean a third, so that it would be another case of the "Old Man of the Sea," or too much of a burden. If it goes through it will be a party measure.

FRAMES NEW REGULATIONS

Frederick R. Bonifield, prosecutor in the Indianapolis police court, has drafted an ordinance regulating motor vehicles and their drivers, which he will have introduced in the city council soon. The measure also includes motor cycles. The proposed ordinance will prohibit any one under the age of 18 from driving motor cars or motor cycles; require the use of aprons so that grease will not drop on the pavements; requires the use of mufflers at all times and provides that cars left standing in public streets must carry at least one white light between sunset and sunrise. Many Indianapolis owners, unwilling to pay garage fees and not having private garage facilities, leave their cars standing in the streets at night. In some instances accidents have been caused because the cars did not have lights.

WOULD CHANGE THE LAW

Chairman Ritter of the finance committee of the Ohio house of representatives has announced his intention of introducing in the next session of the legislature a bill amending the present motor license law. He is of the opinion that the present registration fee of $3 for an electric and $5 for a gasoline car is too low and in the interests of more revenue will urge that the fees be made $5 for all motors having less than 20 horsepower; $10 for motors having a horsepower between 20 and 30 and $15 for cars having more than 30 horsepower. The changes which he advocates are modeled after the laws in vogue in Pennsylvania and New York. Motor owners, it is believed, will not object seriously to the increased tax if the feature of the Pennsylvania and New York laws making the license fees the only tax to which the motor car is subjected, is followed in the Ohio bill.

MANY SYSTEMS IN PIERCE PLANT

FIG. 1—ONE AISLE IN STOCK ROOM OF PIERCE FACTORY, SHOWING GENERAL ARRANGEMENT

THE new factory of the Pierce-Arrow Motor Car Co., opened approximately 2 years ago and located on the site of the Pan-American exposition, Buffalo, N. Y., is one of the milestones in motoring in America; not because more cars are built within its walls than in other American factories—this is not the case—but because its completeness in every respect, its high standard of construction and its general layout and organization compel admiration. The factory as viewed from the trolley car as it approaches it suggests simplicity to the enthusiast who has visited many American factories. There is not a maze of buildings, but order in layout appears pre-eminent. This conclusion is borne out on entering, because in the factory there are but four departments: machinery hall, where all of the machining operations are done; the assembly department, the body department, and a long detached building containing a shipping garage, sheet metal works, brazing department, steel rooms, buffing department, sand blast and power house. The factory lies in a right angle formed by the intersection of the street and railroad. The long detached building parallels the railroad. Lying practically four square to the side of it is the factory proper, with the separate office or administration building in front and facing the street.

A Pierce Administration Building

Entering the offices, or administration building, Fig. 13, is more like entering a big hotel than the executive offices of a motor car factory. This is an oblong building with two stories and a basement. On the ground floor a wide corridor extends from end to end with selling and officers' compartments on the street side and the cost and draughting offices on the rear. On the top floor is an immense assembly hall, Fig. 9, with accommodation for 1,200. Here the company provides lunch for all of the employes who desire such. A complete kitchen, butcher shop, grocery store and bake shop are conducted on the latest plan. Each day at the noon hour upwards of 800 workmen file into the room with its phalanxes of tables like a summer hotel. Before they have arrived a corps of waiters have soups, meats and vegetables served. Coffee and milk are provided and on days when soup is not served there is dessert. The lunch costs 20 cents, and with the system employed it requires less than 30 minutes to take care of the entire force. When night forces are working a midnight lunch is served and dinner at 6 p. m. for those executives who must remain during a part of the evening.

RAW-STOCK ROOM WITH PIPES AND TUBING

Look to Comfort of Men

The basement of the administration building offers an excellent example of what can be done in big factories. It is devoted exclusively to the comforts of the men. On three sides and up the middle are rows of individual wash bowls for the workmen, each with running hot and cold water, individual soap and towel. Near by are long lines of wire lockers for the workmen's clothes, each having a separate key; in the opposite end of the base-

ment is a large bicycle storage space with locking attachments. This complete arrangement for the benefit of the workmen is a suitable introduction to the factory proper and suggests the order, cleanliness and organization that might be expected. Between the basement and the factory is a tunnel for use in wet weather.

The Pierce factory, Fig. 8, has a total area of 360,000 square feet floor space. The machinery hall, 2, is 401 feet long and 205 feet wide, one story, and filled full with everything in the machinery line, including lathes, drill presses, milling machines, planers, grinding machines, shapers, multiple drills, banks of screw machines, etc. Long aisles lead from end to end and high up in the center is the factory superintendent's bridge, which commands a view of the entire room. At the rear of this room is the stock room, Figs. 1 and 2. Fig. 1 shows tiers of boxes, D, on one side for finished parts, with open compartments, C, beneath them; and flywheels, FW, and springs on the other side of the aisle. Fig. 2 shows raw stock, T marking stacks of seamless tubing for car parts, R solid shafting, W scales for weighing stock, and V the ventilator system. A force of workmen is employed in the stock rooms, every part received being checked in from the invoice and assigned to its place.

Assembly Room a Big One

Across from the machinery hall is the vast assembly room, 3, Fig. 5, 40 feet long and 122 feet wide. In one corner the motors are being assembled, seventy in various stages of assembly being noted; in another corner all of the gearsets are brought together and nearby the rear axles are assembled and tried out, Fig. 11 showing how they are tried out with fan blades in place of wheels and an electric motor to furnish the power instead of the gasoline motor.

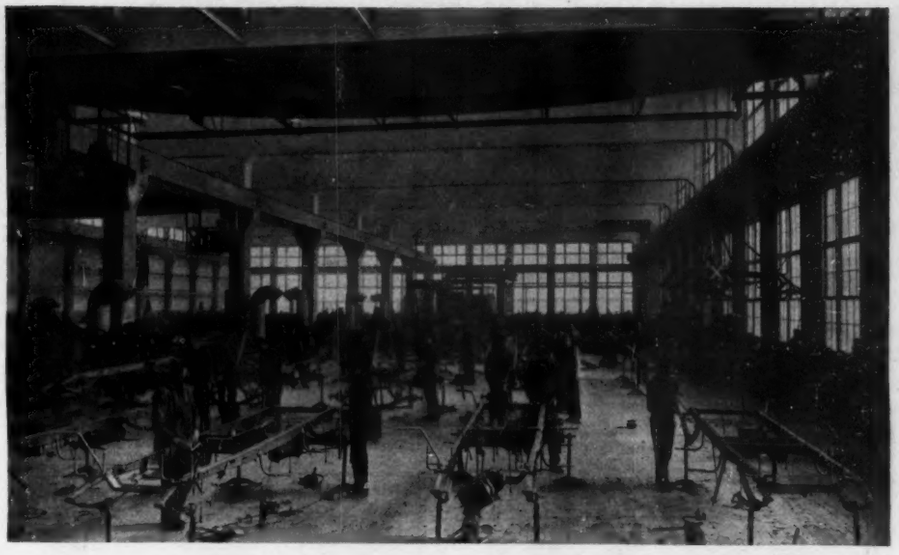


FIG. 3—GENERAL VIEW OF ONE-QUARTER OF ASSEMBLY ROOM

One half of the assembly floor, Fig. 3, is for chassis assembly purposes, thirty-one to forty being in process of erection at once. First the frame is fitted up and its brackets attached; a later stage shows the springs and axles in place; then the steering gear is added, the transmission, etc. When the motor is fitted it is picked up by an overhead crane and carried over the chassis so that two men are from 30 to 40 seconds adjusting it to its position. This done, the complete chassis, X, is picked up by the crane and carried to the chassis painting department at the end of the assembly room. The crane is ever in service; if a motor has to be turned over the crane does it.

The manufacture of wheels is rarely a part of the motor car factory, nearly all of the concerns purchasing the wood part of the wheel from a regular wheel maker. The Pierce company makes all of its own wheels and employs as the superintendent of this department a wheel-maker who for years was in the government employ in the manufacture of wheels for artillery carriages. Fig. 4 illustrates one room devoted to the making of wheels and in this department are seventy-eight men. The making of spokes is interesting. In pile 1 are oblong wood lengths, each designed for a spoke. At 3 these appear after going through the first stage of the process, the machine, 2, showing a spoke in position in the machine. At 4 the square end of the spoke is made in V form so as to fit into the hub and with the other spokes forms a complete circle of wood in the hub. At another machine the outer end of the spoke is reduced so as to enter the

FIG. 4—WHEEL-MAKING DEPARTMENT, SHOWING ONE OF THE MANUFACTURING MACHINES

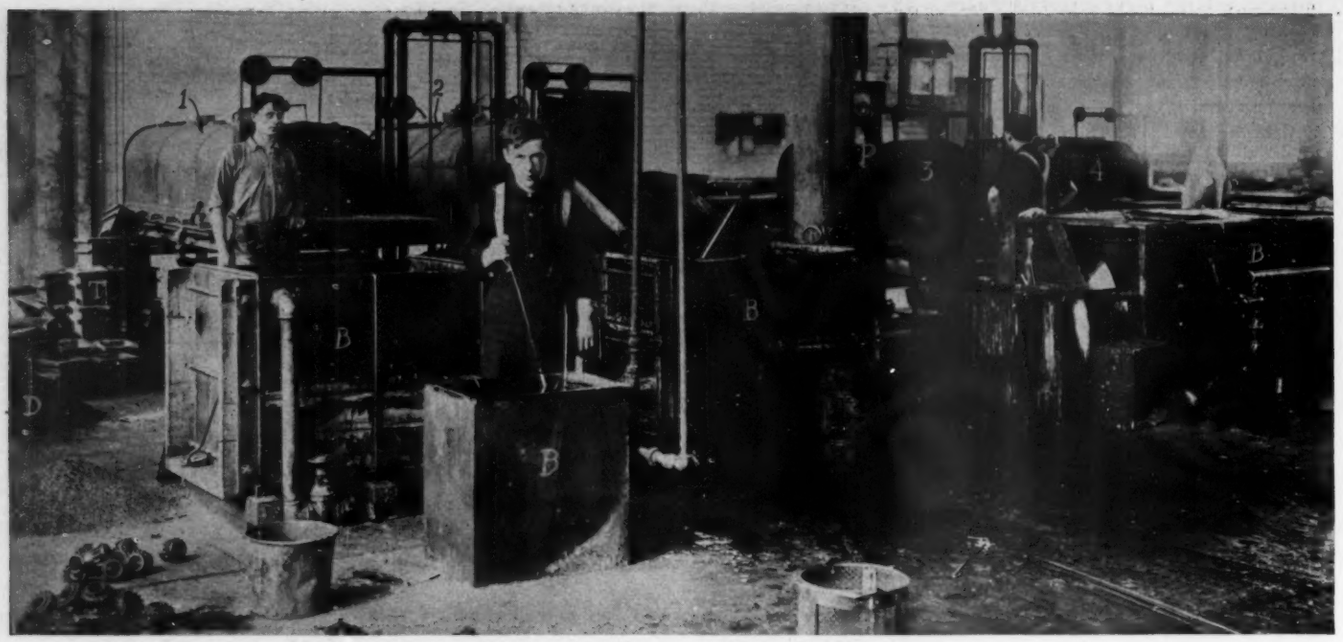


FIG. 5—STEEL ROOM, 1, 2, 3, 4, FURNACE—B QUENCHING VATS

felloe. Illustration 6 shows the construction of the felloes, and at 5 is a completed wheel, the steel rim to take the tire just having been put on. At the far end of the room are spokes complete for a wheel but without the felloe. In making wheels the greatest care is taken in the selection of the material for the spokes, and even after the spokes are made a great many, in fact 20 per cent, or one out of every five, are discarded because of not coming up to the standard. In a pile of completed spokes two are picked out to be tested. One is white and with a clear, straight grain, the other well-grained but made up of white and black wood. The white one is picked as being best, but one blow of the testing hammer crushes it, whereas the one with mixed wood withstands a dozen similar blows. Weight is a big factor, a light spoke never having the strength of a heavy one.

The Steel Room

Perhaps the most interesting department in the Pierce factory is the steel room, where the different steels for shafts, gears, and other parts are treated to give them different degrees of strength, hardness, etc. This should be called the invisible room, not because there is nothing to be seen in it, but because the naked eye fails to detect the changes that are brought about in the steels in this room, except for a slightly different exterior color, which fails to give any adequate conception of the inner changes in the metal. In the planing department of machinery hall the visitor sees the actual cuttings taken off the face of the metal to make it smooth, just as the carpenter can be observed pushing his hand plane back and forth, taking shavings off the side of the board to make it smooth; but in the steel room he cannot see any change in the size of the gears that go in to be treated, no change in the shape of the transmission shafts takes place in this room, the surfaces do not leave the room any smoother than they enter it. In spite of this apparent lack of visible operations the room is of primary importance. It is the room that makes the car. The manufacturer may purchase the most expensive grades of chrome nickel steel, vanadium steel, nickel steel, high-carbon steel, tungsten steel and other less valuable grades; he may do the most accurate machining, milling, planing and grinding in the country; he may have the most efficient designing force, but if the steel room is deficient the car fails. Its transmission shafts break, its transmission gears may be too hard and break, the steering spindles may collapse and the car prove a failure, yet to all appearances it should be the acme of motor car construction. Such is the import of the invisible room—the steel room—where the genius of metallurgy performs his invisible wonders with the metal and makes the motor car the most phenomenal means of locomotion of the day.

Care Taken in Steel Room

Fig. 5 illustrates the steel room a non-pretentious affair, with four or five men in it. In the background are four furnaces, 1, 2, 3 and 4, in which gears and other parts are placed to be case-hardened. In the foreground is a series of wood boxes, B, some filled with water and some with oil, into which the steel parts are dipped after they have been heated to the required temperature in the furnaces. On the post near the center is a pyrometer, P, which measures the temperature of the case-hardening furnaces; on the back wall are more of these high-temperature thermometers. So accurate must the temperatures be in treating sensitive steels such as chrome nickel and vanadium

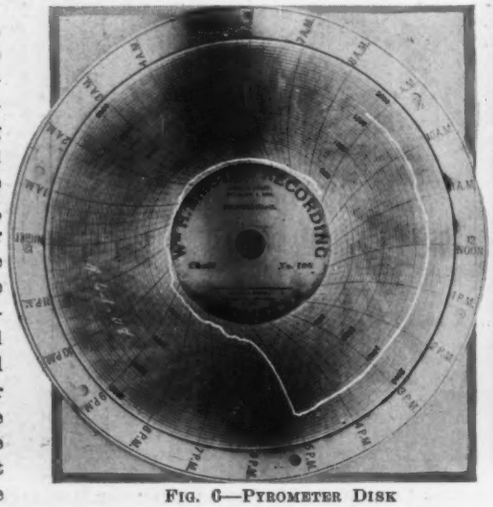
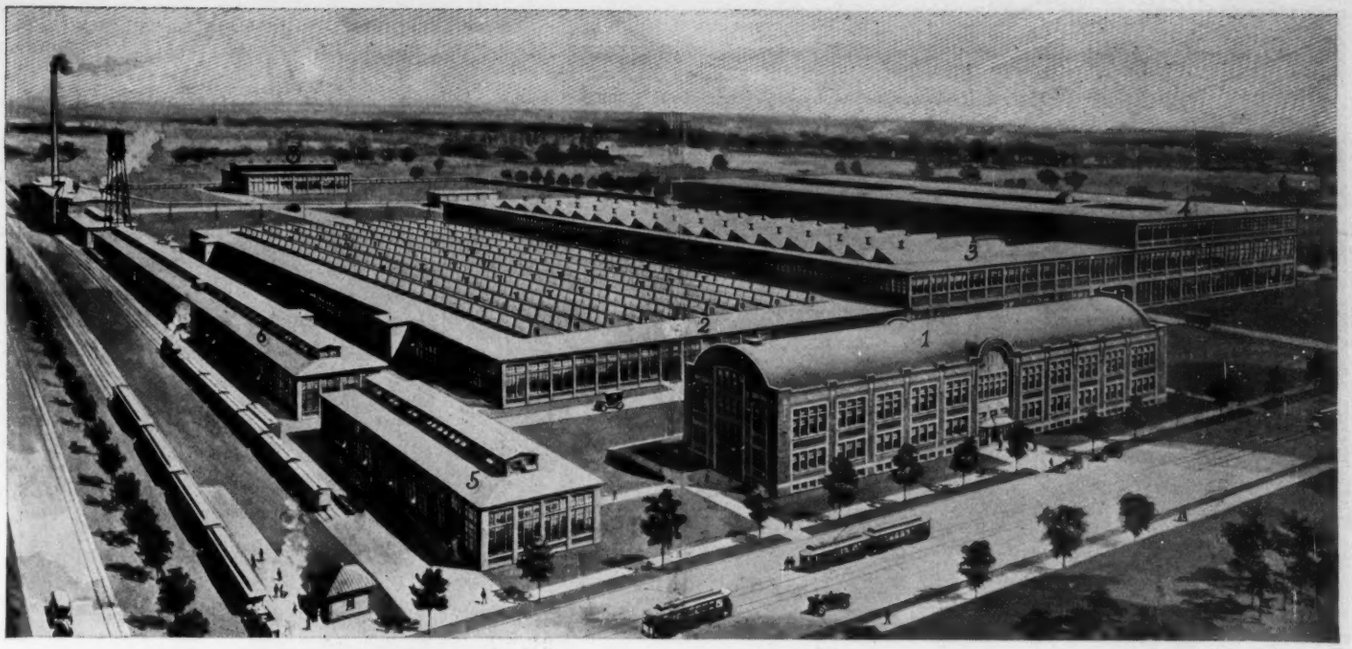


FIG. 6—PYROMETER DISK

FIG. 7—SAND BLAST UNIFORM



1 Administration Building, 2 Machinery Hall, 3 Assembly Department, 4 Body Department, 5 Garage, 6 Brazing, Steel Room, Buffing, Electroplating, 7 Power Plant, 8 Engine Testing Rooms

that the head metallurgist does not rely on the artisans of the steel room for proof of the temperature, but in each pyrometer is a recording disk. One is shown in Fig. 5, on which a needle traces the temperature of the ovens. As the disk revolves, in obedience to a clock movement, a needle traces on the disk a white line showing the temperatures; and on the outer edge of the disk are the hours of the day at which such temperatures were registered. The disk, Fig. 8, shows that shortly before 9 a. m. the temperature of the oven rose from 1,650 to 1,700 degrees Fahrenheit, where it remained until 5 p. m., when at the end of the day's work it rapidly dropped to 200 degrees, and by 10 p. m. was down to less than 100. One disk serves for a day; all of the disks are safely conserved and later, should a certain part of a certain car, no matter whether sold in Chicago, New York or San Francisco, break, so close a check is kept in the factory that the foreman can look up the pyrometer disk used on the day the part was treated and thereby ascertain if the temperature was correct and who was at fault.

Case-Hardening the Parts

Case-hardening is one of the commonest processes of the steel room and consists in making the surfaces of shafts or gears harder than the inner parts of the metal. On shafts this is done on bearing surfaces and in gears the teeth are so hardened. Theoretically, case-hardening consists in increasing the amount of carbon in the surface of the metal, because in proportion to the increase in the amount of carbon in steel does its hardness increase. This hardening extends from 1/64 to 1/32 inch inwards and when a bar of metal is broken the difference between the arrangements of the particles in the case-hardened part and that not hardened can be readily seen with the naked eye. In case-hardening the parts, such as small gears shown on the floor in the left front Fig. 7, are packed in boxes, T, with bone dust, D, after which the boxes are put in one of the ovens and the temperature raised to 1,400 degrees Fahrenheit, or higher, according to the grade of steel being used, the different grades of steel calling for different temperatures.

In treating the parts of a universal joint made of chrome nickel steel, the parts are carefully packed in bone dust so that none of them touch one another or the sides of the trays; they are then heated at a temperature of 1,600 degrees for 7 hours. This done, they are taken out and immediately dipped into one of the oil baths and left to cool in it. Chrome nickel steel cannot be dipped into water because it would crack and be utterly ruined. So delicate is this grade of steel that the temperature of the ovens must be kept uniform, a variation of 50 degrees being sufficient to ruin the parts undergoing treatment.

Treatment of Other Parts

By way of contrast with chrome nickel steel is the treatment of other universal joint parts made of twenty to twenty-five point carbon steel. These parts are heated for slightly over 9 hours and left to cool in the bone dust to a temperature of 800 degrees, when they are put in a smaller oven and heated to 1,400 degrees. Immediately taken out of this oven, they are dipped in water, which completes the heat-treating process.

Crucible steels used in some old styles of cars for cups and cones of the bearings is in its heat-treatment process first heated to 1,420 degrees in an open furnace and then dipped in water until cold. This done the part is put into a saltpeter bath and raised to a temperature of 450 degrees,

Fig. 9—Lunch Room in Administration Building

FIG. 10—GENERAL VIEW OF PIERCE INSPECTING DEPARTMENT WITH ITS OFFICES

which is designated drawing, after which the part is ready for the car.

In transmission shafts a variety of treatments are needed for the same shaft, as one part of it serves as a bearing and another part carries gears. A nickel shaft steel of this character goes through a six-step process. First, the end forming a bearing is heated to 1,450 degrees in a lead bath; this done, it is hung 20 minutes in a cyanide of potassium bath to carbonize it; and, thirdly, this end is dipped in an oil bath until cold. This is half the process. The fourth step is placing it in a furnace and heating the shaft all over to a temperature of 1,400 degrees, which is the magnet point, namely that point at which all magnetism ceases. Step five consists in taking it out of the furnace and dipping the bearing end in oil until the remainder of the shaft is a dark red; and sixth, the entire shaft is immersed in oil and allowed to cool.

Treating Nickel Steel Shafts

A nickel steel shaft in treatment is heated to above the magnet point, 1,400 degrees; it is then dipped in oil; it is next transferred to a saltpeter bath to draw to a temperature of 450 degrees, which toughens the metal, and then is finally cooled. Fish oil is used for ordinary case-hardening and low-carbon steel work, and cotton seed oil for the final dipping of nickel steel parts. Annealing is by heating steel to a given temperature and allowing it to cool very slowly, ordinarily 12 hours being allowed for such cooling. This process softens steels and equalizes the metal strains throughout the piece. Often without annealing there will be one set of strains in the outer part of the piece and another in the inner metal, with the result that a quick change of temperature would cause a cracking of the entire piece. In steels a percentage of phosphorous is used, as it lends hardness and naturally causes brittleness. Such are a few of the invisibles of the steel room, these few examples showing the vast amount of heat treatment the steels receive.

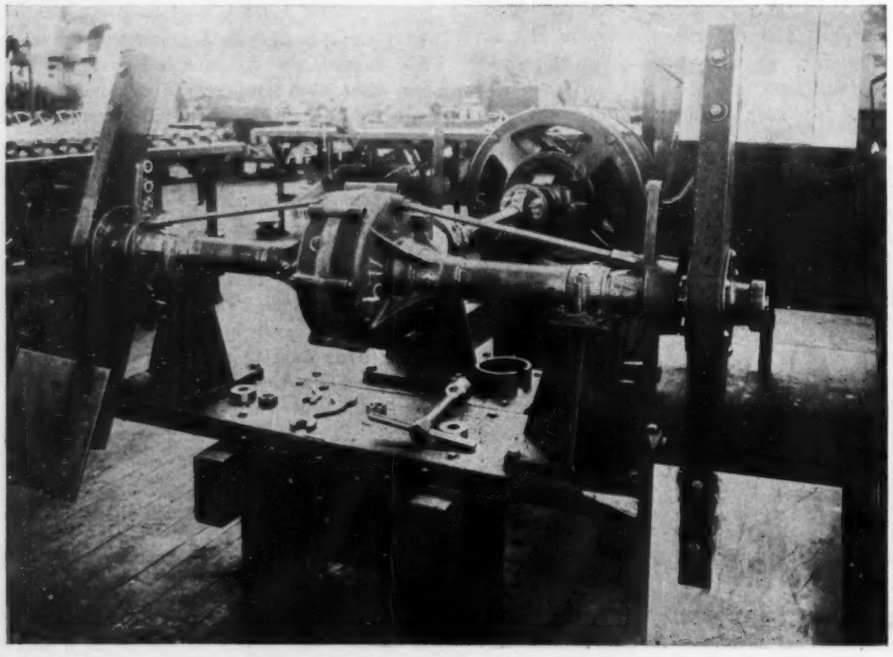


FIG. 11—TESTING PIERCE DIFFERENTIALS AND REAR AXLES

Pierce Inspection System

The department of inspection in the Pierce factory is of cardinal interest. It consists of fifty-four men who do nothing but see that the factory workmen do their work right. These fifty-four men, under a competent foreman, are located in a great oblong room alongside of machinery hall and, as illustrated in Fig. 10, the majority of them sit or stand beside tables and inspect parts. The illustration shows a great many trays, T, on the floor, each filled with finished or partly finished parts of the car just in from machinery hall. The inspecting department is divided by the aisle A into two divisions. That on the left side of the aisle is for storing parts brought in to be inspected, and that on the right side is for the inspection purposes. In the illustrations, S shows the superintendent looking after the checking system, for not a part enters the inspection compartment or leaves it without an accompanying card showing the workmen who did the job as well as the number of pieces sent in for inspection.

Divers are the inspecting operations in this department, C, D and B showing workmen engaged and E the head inspector. One workman with a master nut is inspecting the threads on a certain size of bolts, threading the master nut on and taking it off every one to see that the thread is correct and of the required length. Near him is another performing the same inspection of screws; close by one is calipering bearing rings; another is with master nuts testing the threads on the carbureter parts; beside him one measures the length of the carbureter needle valve; at the next table the camshaft bushings are being calipered so that they will fit the crankcase casting eyehole without the slightest work being done on them.

Careful as to Detail

Two men use micrometer valve stems allowing a variation of 1/1,000 of an inch over or under; the strength of all valve springs is tested; with a surface gauge all crankshaft throws are inspected, only one-half of 1/1,000-inch variation being allowed; only 3/10,000-inch variation is permitted in the fitting of annular ball bearings. This inspection role might be continued almost indefinitely. Every part is inspected between each succeeding operation. If there are six separate operations on a shaft, such as turning, planing, milling and machining, etc., the piece is sent to the inspecting department after each to see that each is done correctly. If an operation is done wrongly the part is junked before time is spent on successive operations, this being the value of inspection between operations. Some parts entering the car are inspected no fewer than twenty-six times. So thorough is the inspection that when the parts go to the assembly department the assemblers have not any work to do on them, each part fits its place, and should it not it is immediately returned to the finished stock room and an investigation made to determine the workman who made the error as well as the member of the inspecting force who passed it.

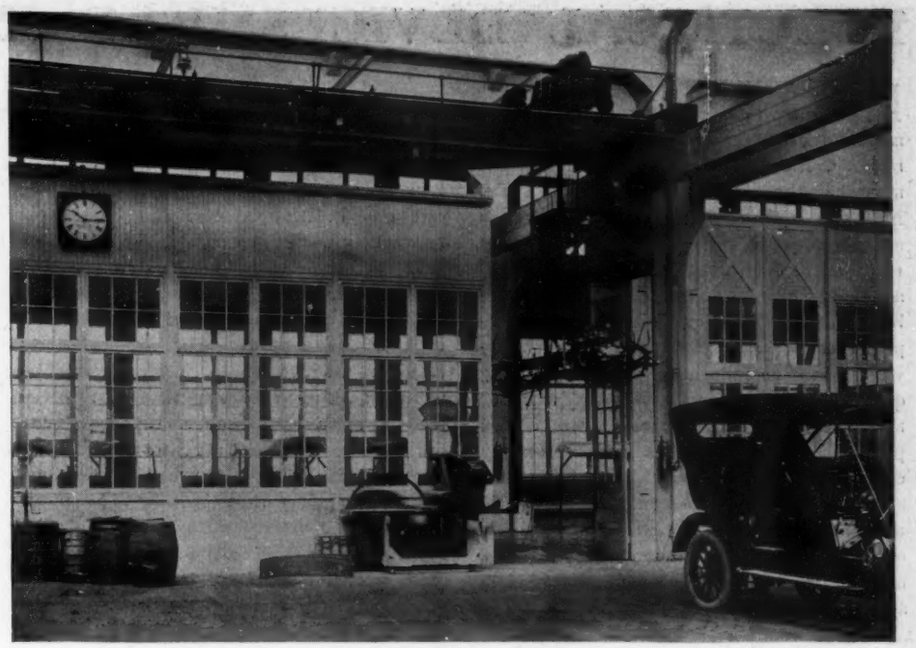


FIG. 12—THE OMNIPRESENT CRANE IN PIERCE ASSEMBLY ROOM

Fifty-four Testers Useful

To many the employment of fifty-four men to simply inspect work looks a huge expense, but the saving thereby is big. An example will suffice: The I-beam front axle forging is first burnished all over to see if any surface cracks exist, which, if they did, would render it useless. After this burnishing a crack is readily seen and the axle is immediately set aside and returned to the forging concern from which it was purchased. Had this inspection not been made the ends of the axle would have been drilled for the steering knuckle hub, these parts milled and much other work done, only to find in the end that the crack rendered the entire piece useless and all work done on it was a dead loss to the factory. This holds true with all other parts. All rough castings or forgings, as soon as they reach the factory, are inspected in the stock room when being checked in, and if imperfections are discovered are immediately returned.

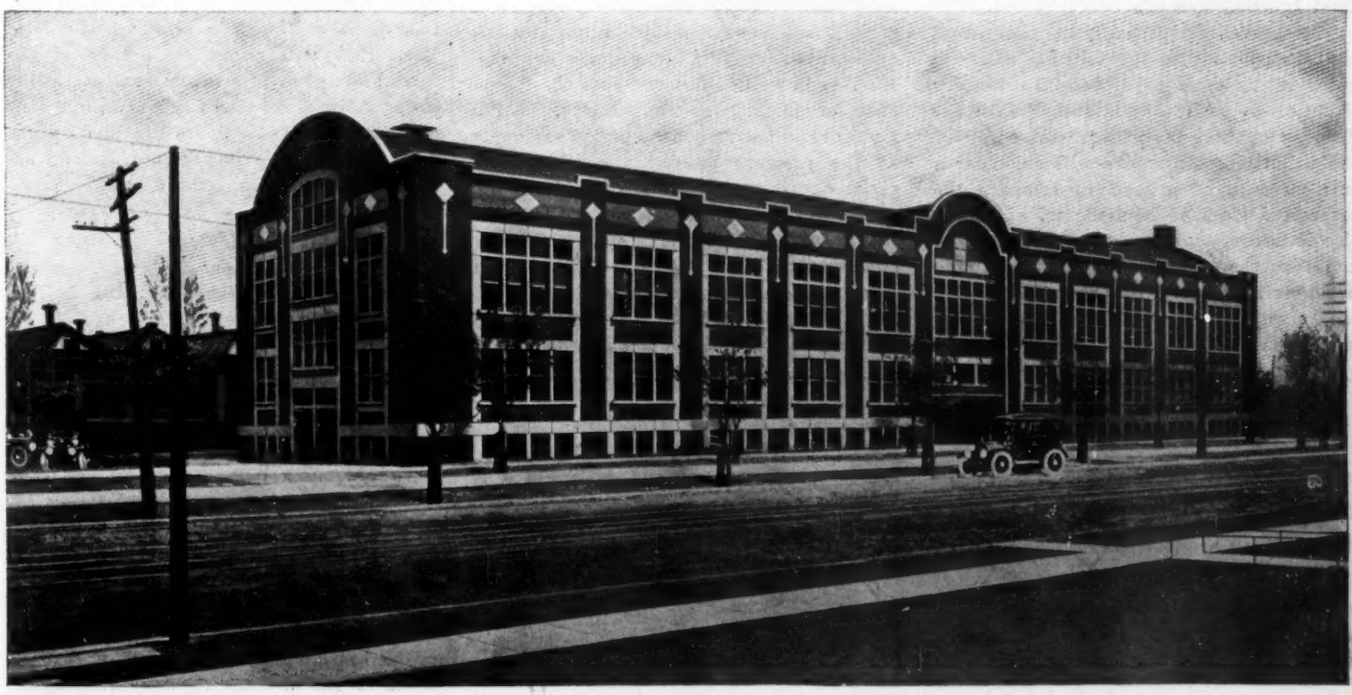


FIG. 13—THE PALATIAL PIERCE ADMINISTRATION OR GENERAL OFFICE BUILDING

ELECTRICAL DEVICES USED IN MOTOR CARS

By Thomas J. Fay
Part VIII

IRRESPECTIVE of the devices used in ignition work, be they either of the magneto order or with a spark coil and battery, the ills of the magnetic circuit must be taken into account and the spark must be advanced in consequence. In considering this question it is necessary to separate out the causes, and in so doing account must be taken of the inflammability of the gas—or lack of it—as the prime cause; and the spark must be advanced to compensate for slow-burning qualities of the mixture, independently of the character of the ignition system used provided the spark has the same energy component in all cases. That the spark can be with the same energy if a coil is used as will be the case if a magneto is employed, is only a matter which depends upon designing the coil to afford the same amount of energy.

That a coil can be made such as will afford the same amount of energy is one of the details that can be taken for granted, but that coils are so designed as a rule is not so sure. In a general way it is fair to presume that coils are not so strong as magnetos, and the popular impression is that they are not so good for the purpose. It is not the purpose here to cater to superstitions, and broadly speaking it is possible to make coils that will afford quite as much energy in the sparkplug gap as will be due to the use of the strongest magneto. Whether or not it will be as well to do so, is quite another matter, for, in all truth a magneto is a good source of energy, that can be relied upon for a long time, whereas batteries have to be cared for most assiduously if they are to be depended upon.

Dual Ignition Systems

The best way perhaps to understand the situation from the battery and coil point of view, is to discuss the battery situation at some length, rather with the expectation that a good understanding of the underlying principles will engender a fair measure of ground to compare the respective class of equipments. In practice it is customary to use a dual system, and that the good qualities of both may be experienced each of them are used in such a way that the energy of the battery is conserved, in that the magneto serves as the main ignition system and the battery is the auxiliary. In small cars, using but one ignition system the battery is frequently used extensively.

It cannot be said that this condition is to be permanent, because it is possible to procure magnetos that will enable starting on the magento with little if any trouble. On the whole, then, it would be a fair statement to say that it resolves into a mere choice on the part of car builders, and motorists in general, to choose the one or the other of the systems, excepting that it seems to be a good idea to use a dual system, as a rule, in which case it is common practice to include a battery and coil.

Length of Spark Gap

It seems to be the general opinion that when a magneto is used the distance between the nodes of the spark plug should be different than when a coil is employed; why this is so is not very plain, particularly when account is taken of the nature of the problem. Fig. 22 is offered as approximating the length of airgap that will suffice in air, under a pressure of one atmosphere, when the same coil will afford a spark in the motor cylinders under pressure. As will be observed, when the airgap is ½-inch the pressure in the cylinder can be as high as 90 pounds per square inch, for a spark across a 1/32-inch gap; whereas, if the pressure is reduced to 60 pounds per square inch in the cylinder a spark in air of ¼-inch will suffice. Obviously this is a question that is besides the spark coil used, and depends upon the relative resistance between a gap in the open air and a gap in the cylinder under varying degrees of pressure. It is well understood that the resistance of a gas, under pressure, is far higher than the resistance of the same gas at the pressure of the atmosphere. A given electromotive force, independent of the source, if the wave is of the same shape, will jump a given gap, and it is obvious that the energy dissipated in the gap will be independent of the source of the electromotive force. Under the circumstances, then, it is a plain deduction that it is a matter of no moment as to the source of the given electromotive force.

The secondary electromotive force in the sparkgap of a plug placed in a cylinder will depend upon the length of the gap on the one hand, and the compression on the other; if a coil, or magneto, is incapable of affording the requisite electromotive force the result will be no spark; if the spark is propagated it is then a sign of the ability of the coil, or magneto, to do the work, and the great main point is that the amount of work to be done in each case will be the same. The probabilities are that the best spark will be the one that is propagated in a cylinder of the greatest compression, with the nodes of the sparkplug separated the greatest possible distance; the actual heat units dissipated will then be a maximum, and it is a fair inference that it is heat units that are wanted—at the desired temperature—rather than a spark perse. In racing, and other speed cars, high compression is desirable, primarily because the rate of flame propagation is greater; and again, due to the energy that is dissipated in the spark, allowing that the ignition system is capable of negotiation a gap of the maximum possible length in the mixture under high compression.

Battery Value vs. Magneto

At all events, since the coil is used either with or without a battery, the ills of the coil should not be charged to the battery because the latter device as a source of power, while it is in good working order, is of greater ability than the average magneto. As an illustration of the relative outputs of magnetos as compared with batteries it is enough to say that it is a very fine piece of magneto work that will afford an output of 50 watts; a good secondary battery will easily deliver five times this rate, and the advantage of the magneto lies in its ability to maintain its lower rate as long as the engine will afford the necessary driving power.

Batteries in Ignition Work

Ignition batteries are of two classes, the one which is best illustrated in the familiar dry cells, and in which the elements are decomposed in the process of generating the electrical output, whereas the other type of battery is best represented in the storage cells in common use, which type of battery is capable of being recharged time after time, so long as the active materials adhere to the grids and the electrolyte is maintained at the right density, assuming the battery is maintained in good order. What we have are primary and secondary batteries, with the understanding that a primary battery is one in which the elements are decomposed in the process of delivering electrical energy, whereas in the secondary

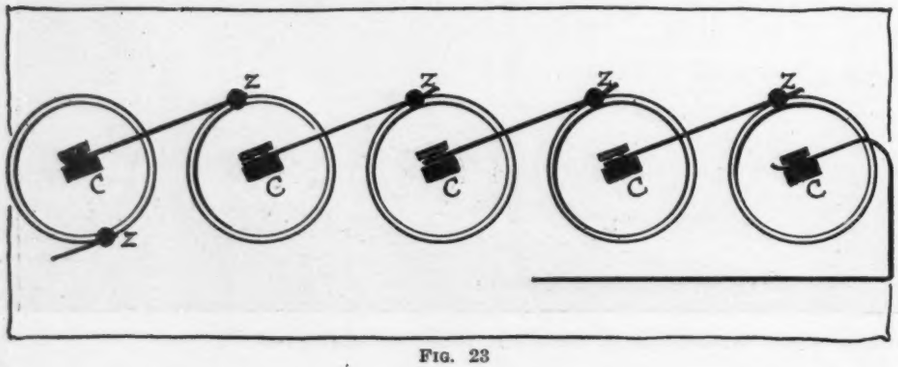


FIG. 23

battery the chemical changes are reversible, so that they are capable of repetition for an indefinitely long time.

Considering all batteries, the law of chemical action may be stated as follows: The amount of chemical action in a cell is proportional to the quantity of electricity that passes through it. In other words the chemical action that takes place in a cell will be due to the current in amperes that passes through the same, and it is a matter of no moment at all, as to whether the cell is a primary or secondary, in so far as this point is concerned. If, as in a primary cell, the current is at the expense of chemical dissolution of the elements, the amount of dissolution will be indicated by the amount of the electrical energy produced. If the electrical energy is charged into a secondary battery the amount of de-sulphation that takes place, considering a lead type of battery, will be indicated by the amount of electrical energy used in the process.

If cells are in series, as shown in Fig. 23, the amount of chemical action in each cell will be the same. This statement takes into account the effective chemical action to the exclusion of the action such as results in local manifestation, due to parasitic currents engendered by impurities in the materials of which the elements are composed.

In the absence of chemical action a cell of battery is said to be dead and its usefulness will be nil unless it can be revived, which is a matter of reestablishing the conditions to produce the desired chemical action. For every chemical action in a cell battery there should be a reaction to correspond else the battery will permanently alter in its characteristics, to the detriment of the same from the point of view of further utility as a battery. Right here is the dividing point between primary and secondary types of batteries. In primary batteries a reciprocal reaction cannot be engendered, so that the battery undergoes desolution in the process that produces the electrical current, while in secondary batteries there is a reaction that results in an electrical current, and the action that produces it is due to a charging process, and the desulphation that follows, when reference is had to storage batteries of the lead type.

Two Primary Battery Types

The so-called dry cells, although they belong to the primary type of cell in general, are better known as gravity cells and are ordinarily used in open-circuit work, which is of a light intermittent character. It was after the introduction of the motor car that dry cells were so improved that they were rendered capable of doing work of a more arduous character, and this improvement consists of a better means of counteracting depolarization.

As an illustration of dry cell construction reference may be had to Fig. 24, showing a tube, or shell, of chemically

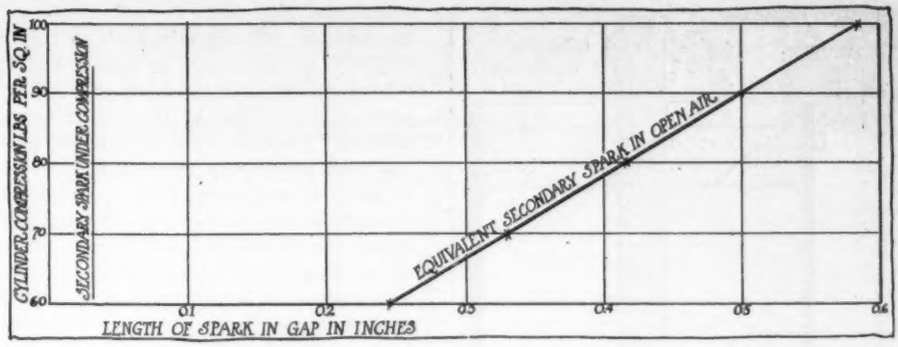


FIG. 22

pure zinc, surrounding and retaining the exciting materials, in which is immersed a carbon element of rectangular section, not in contact with the zinc and so contrived that connections can be made at the terminals A and B. The sealing compound serves to keep the exciting material from drying out and foreign substances from entering the cell. In practice it is the idea to insulate the zinc shell from contact with any adjacent cell or the surrounding crate by means of pasteboard which, although not so good as it ought to be, serves the purpose very well indeed.

Grades of Exciting Material

The exciting materials are not the same in all makes of cells, but the general plan is common to them all so that it will be enough to give one or two formulae for exciting materials in so-called dry cells as follows (for cells as shown in Fig 24):

One part zinc oxide.
One part sal ammoniac.

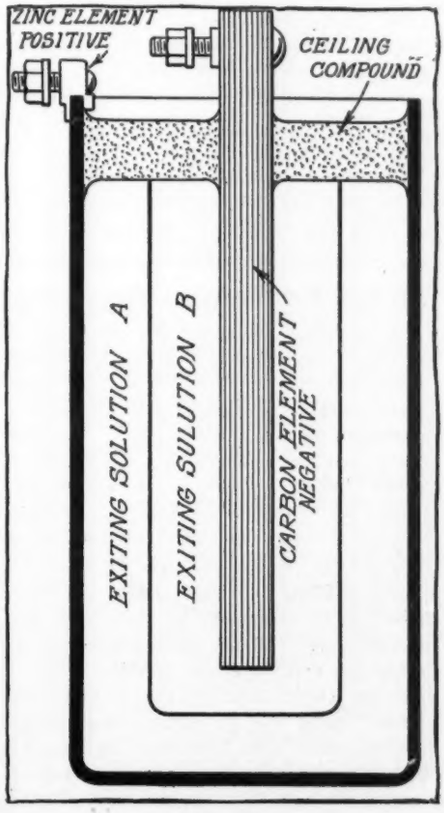


FIG. 24

Three parts plaster of paris.
One part chloride of zinc.
Two parts water.

In this cell the depolarizer is oxide of manganese, and it is mixed with the carbon at the time of making the same. When this cell is new it will show an open circuit electromotive force of about 1.4 volts and the internal resistance will be about 0.3 ohms which, from the point of view of secondary cells, would be regarded as very high indeed.

Fig. 25 illustrates another form of dry cell designed to afford better results, although it is not a proven fact that it is really any better. It is designed for two exciting solutions, A and B, instead of one, and the formulae of the respective solutions are:

For cell as shown in Fig. 25, exciting solution A:
One part sal ammoniac.
One part chloride of zinc.
Three parts plaster of paris.
.87 parts wheat flour.
Two parts water.
Exciting solution B:
One part sal ammoniac.
One part chloride of zinc.
One part peroxide of manganese.
One part of granulated carbon.
Three parts plaster of paris.
One part wheat flour.
Two parts water.

In these examples of exciting solutions the proportions are by weight, and in the case of the two-solution cell there is chance for differences in quality, due to the proportioning of the respective solutions. In the cell, Fig. 25, it is the peroxide of manganese and chlorine in solution A and B that serves as the depolarizer, so that in this cell the depolarizer is not mixed with the carbon element. The main idea will be to have enough of the depolarizer present, and it is highly improbable that a little excess will result in a disadvantage. On the other hand, it is quite out of the question to expect any continued good result from any cell of this character in the absence of an adequate supply of depolarizer, for once a cell is depolarized it will cease to render efficient if any considerable service.

If in a cell of battery hydrogen collects at one of the poles this hydrogen will

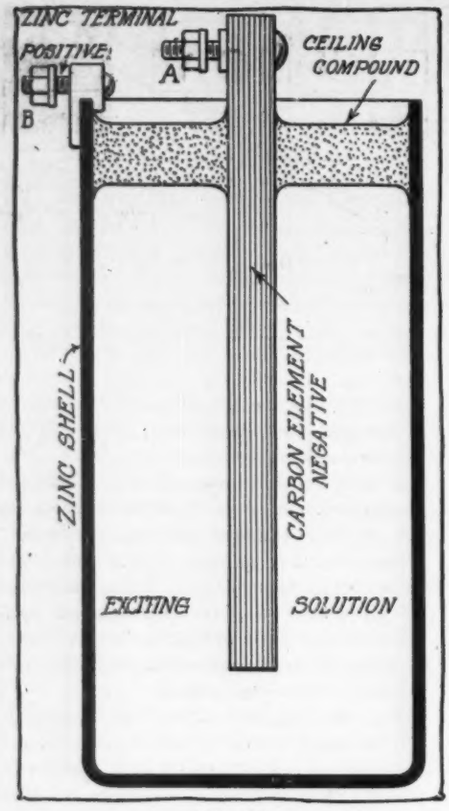


FIG. 25

isolate the element, and the amount of chemical action thereafter will be much reduced. This hydrogen skin weakens the current, due to the fact that the internal resistance of the cell is increased; it is of of greater detriment from another point of view, in that it sets up a counter electromotive force, due to the oxidizable property of hydrogen, which is almost equal to the same properties in zinc. It is because of this defect in open-circuit cells in general that they are not suited to close-circuit work, in which a current must be furnished continuously. In order to render dry cells serviceable in ignition work every attempt is made to provide an adequate means of preventing depolarization by adding suitable depolarizers, the function of which is to take up the hydrogen while still in the nascent state. In this state hydrogen is extremely active and the formation of bubbles of hydrogen will be aborted if some suitable depolarizer is present in acceptable form. Hydrogen bubbles invariably form at the point where the current leaves the cell and among the depolarizers used will be found such compounds as hold chlorine—in the type of cells under discussion—and as before stated, manganese plays an important part.

Electrochemical Depolarizers

If, instead of a zinc cup as in dry cell work a copper cup is used, and the carbon is placed inside of a porous cup the whole to be surrounded by the copper cup in the manner as shown in Fig 26 the depolarization will be due to an electrochemical process as follows: When the circuit is closed the zinc element will dissolve in the solution of sulphuric acid, to form a sulphate of zinc, and hydrogen will be liberated; but this hydrogen will not appear on the surface of the copper cell as bubbles. Instead, the hydrogen will penetrate the porous cup entering the solution of sulphate of copper, there to enter into relation in such a way that the hydrogen atoms are exchanged for copper atoms, in consequence of which metallic copper is deposited on the surfaces of the copper shell, instead of hydrogen. The chemical formula for the action may be set down as follows:

First stage: $Zn+H2S04=Zn\ So4+H2$.

Second stage: $H2+CuS04=H2\ S04+Cu$.

In the first stage, as indicated by the formula, the zinc and sulphuric acid, which is diluted, produces sulphate of zinc and hydrogen; in the second stage, hydrogen and sulphate of copper produces sulphuric acid and metallic copper. As will be observed, in view of the action indicated, the copper cell is thickened by the addition of copper plated on to its surfaces, and the zinc is dissolved to replenish the solution of diluted sulphuric acid, and the hydrogen is translated electrochemically so that copper instead of hydrogen forms around the copper pole.

The exact electromotive force of this type of cell will depend upon the strength of the sulphuric acid solution, to some extent, and when the strength of the same is that due to diluting concentrated sulhphuric acid with twelve parts of water the electromotive force is 1.178 volts. If concentrated solution of sulphate of zinc is used instead of diluted sulphuric acid the electromotive force of the cell will be 1.07 volts. The author has experienced very good results with this type of cell, using sulphate of zinc in the porous cup, as it is a better chemical to handle, and the general performance of the cell is very stable; the voltage holds up to an even level and the internal resistance will be very low in the properly-made cells of this class. The porous cup is absolutely necessity, and it is also important to use good cups for the purpose. In general it is considered that even brown paper, parchment, wood pulp, etc., will serve instead of a regular porous cup, but in the experience of the author it is desirable to employ the finest grade of porous cup to be had for the purpose. Although the zinc-carbon cell will show an open-circuit voltage of 1.4, whereas the zinc-copper cell, with sulphate of zinc in the cup, has an open-circuit voltage of 1.07, which is less the fact remains that, on closing the circuit, the zinc-copper cell will deliver the greater amount of energy, because the internal resistance of the cell is less and the depolarization action is absent.

Zinc Has to Be Replaced

In both types of cells it is zinc that has to be replaced—not counting sulphate of copper, in the copper cell, the cost of which is but slight—and the cost of replacing the zinc in the copper cell will be the least, on the count that it is in the form of a plate, to be inserted in the cup. Considering the zinc cell, the replacement of this metal becomes a more serious matter on the ground that the cell itself is destroyed, since the zinc of which it is made is eaten away. On the other hand, the zinc cell is free from the annoying troubles that come from the use of liquid exciting fluids, and this is probably the greatest reason why dry cells are used in ignition work, although it is true that they serve very well considering the arduous service.

(To be Continued.)

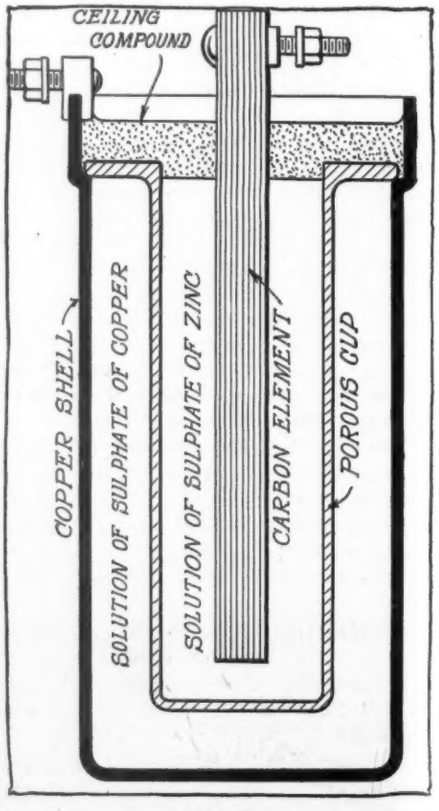


FIG. 26

Road Problem in Maryland

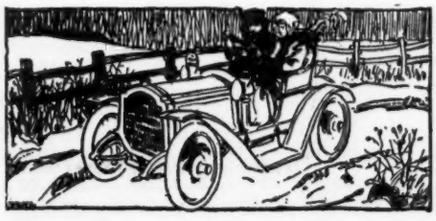
Baltimore, Md., June 6—The work of constructing the good roads system in this state under the $5,000,000 loan has practically begun with the award of the first contracts for this work. Four contracts have just been awarded. A number of other bids were turned down because they were too high. The bids in southern Maryland and on the eastern shore brought Governor Crothers back to his original idea, that the state can build roads more economically than individual contractors. "I am convinced that the state can erect a stone crushing plant on one of the banks of the Susquehanna river," said the governor, "and secure material for first road building and for subsequent repairs cheaper than a private contractor can. We can use convict labor to operate this proposed plant."

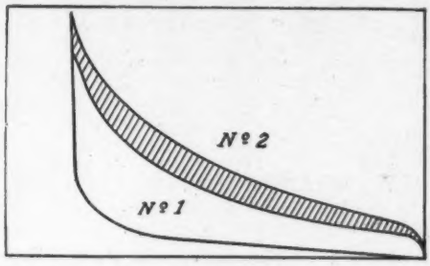
Manufacturers' Communications

STUDYING MOTOR COMPRESSION

CLEVELAND, O.—Editor Motor Age—The early form of gas engine did not make use of the principle of compression, and of course the amount of power and the per cent of efficiency of these primitive motors was very much lower than they were capable of delivering, were the value of compression then known. A glance at the accompanying illustration will show a very marked difference in the area of the cards of two engines with the same bore and stroke, one engine carrying very low compression and the compression of the other engine is relatively high. The area of the card No. 2 is greater than the area of card No. 1 by an amount equal to the shaded portion. Since the amount of work performed in the cylinder is directly proportional to the area of the card, it follows that increasing the compression increases the power of the engine as well as its efficiency. There is, however, a limit to the degree of compression that may be safely used in connection with practical work and in engines using gasoline as fuel, this pressure hovers around 80 pounds per square inch gauge, depending somewhat upon the quality of the fuel and upon the cooling system. Above this pressure, the heat induced in the operation of compressing the gas is sufficient to cause pre-ignition of the charge, a condition that produces an enormous strain on the working parts of the motor. In fact, very few gasoline engine builders are using these high compression pressures owing to the above reasons.

When the compression type of motor grew into prominence, and manufacturers began to increase the compression, a condition of affairs that had not previously been considered, accompanied this step. Heretofore the maximum pressures developed in the cylinder were not great enough to cause any alarm on the part of the manufacturer as to the nicety of contact between the cylinder wall and the piston as there was very little if any leak at that point. However, when high compression and the consequent high maximum pressures began to be used, the question of a well-fitting piston began to attract more attention. The correct method of securing a perfect fitting piston is today a subject of much discussion, although





FIGS. 1 AND 2

by the use of well designed piston rings and carefully grinding the surfaces in contact, then lapping the piston in place, manufacturers have succeeded in materially reducing the piston friction and in still maintaining good contact.

In designing a gas-engine cylinder, the subject of compression is one of the most important things to consider. The theoretical card may be plotted and then the cylinder proportions taken from it, or, having determined the horsepower and bore and stroke, the volume of the compression space and the compression pressure necesasry to give the power may be calculated from the formula

$$PV^{1.35}=P_1V_1^{1.35} \text{ or } P=P\left(\frac{V}{V_1}\right)^{1.35}$$

P=Atmosphere pressure=14.7 pounds per square inch.

V=Volume of piston displacement plus the volume of the combustion chamber.

P=Compression pressure.

V=Volume of gas at end of stroke=Volume of combustion chamber.

We may calculate the compression pressure from the Mean effective pressure by the formula M. E. P. $2p-.01p^2$ where p equals the compression in pounds per square inch gauge. From the formula

$$\text{H. P.}=\frac{\text{PLAN}}{33000}$$

we may substitute the values we have already determined and solve for P. In this formula:

P=Mean effective pressure.

L=Length of stroke in feet.

A=Area of piston in square inches.

N=Number of explosion strokes per minute.

Assuming that we desire to get 8-horsepower from a single-cylinder four-cycle 5x5 motor at 900 revolutions per minute.

Solving for P and substituting values we have

$$P=\frac{8\times33000\times12}{5\times19.635\times450}=71.70$$

Substituting this value in the formula for mean effective pressure we get:

$$2p-.01p^2=71.70$$

Solving this affected quadratic equation we get P=73.65, say 75 pounds per square inch.

Substituting this value for p in the equation

$$PV^{1.35}=P_1V_1^{1.35}$$

and solving for V, we get

$$75=14.7\left(\frac{V}{V_1}\right)^{1.35}$$

Since P_1=75 and P=14.7 the equation will assume this form:

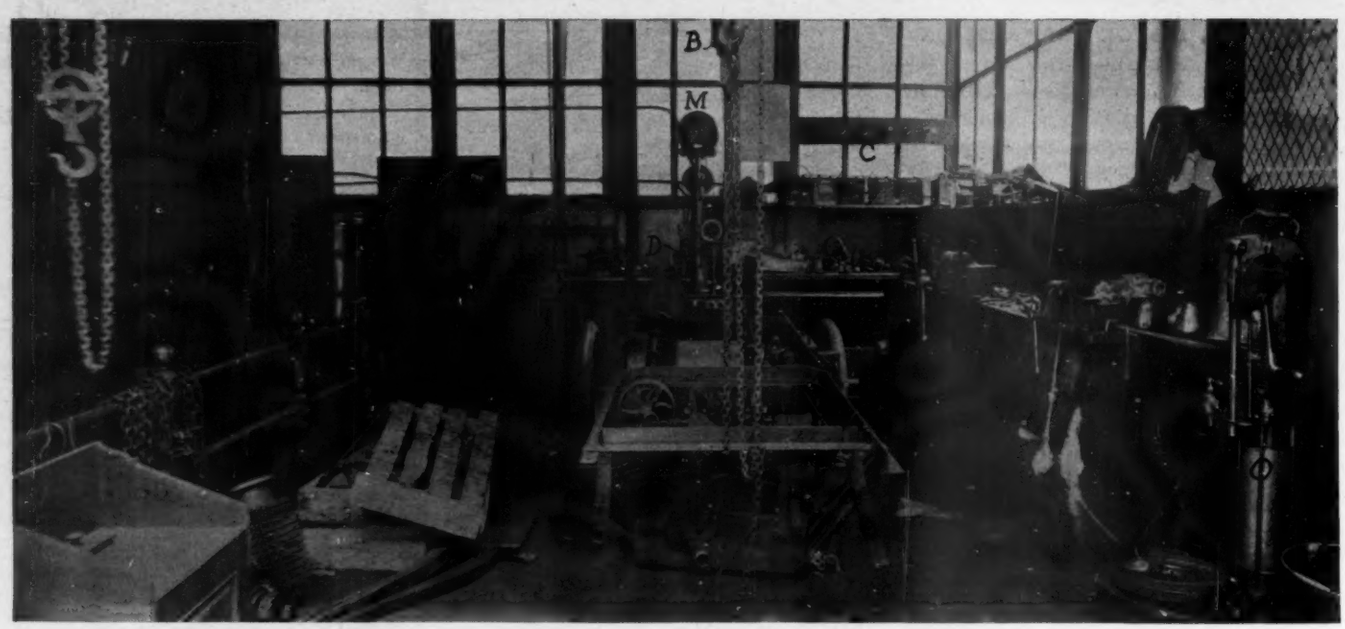
Now since V equals the volume of the piston displacement plus that of the combustion chamber, and V_1 equals the volume of the combustion chamber, it follows that if we assume some value for V_1 equal to a certain portion of the piston displacement volume, and substitute this value in the above formula, we may solve for the result which should of course equal 75. Two or three trials may be necessary in this case to find the proper value. In order that the problem may be thoroughly understood, let us assume that the volume of the combustion chamber is 1/18 of that of piston displacement, and solve for P_1 Substituting in the formula we have:

$$14.7\left(\frac{131.35}{32.72}\right)^{1.35}=?$$

Solving we get 96 pounds per square inch absolute, which is too high for the purpose so another of value V_1 must be assumed and worked out in a similar manner until a value will satisfy the equation. Having found the correct value, we may design the combustion chamber to contain the required volume.

There are, of course, several ways of going about the design of the cylinder, some designers prefer one method and some another. There is so much data afloat relative to the design of gas engines that the cylinder proportions may be worked out in a more simple manner provided we accept someone elses results as a substitute for formulas based on theoretical principles. If, however, the problem is to be worked out on a theoretical basis, the process is much longer, but, on the other hand, more reliable. The above formulas are recognized standards and have been brought out during the course of investigation of the action of the internal combustion motor.—Zerro Machine and Foundry Co., by A. E. Palmer.

The Realm of the Commercial Car



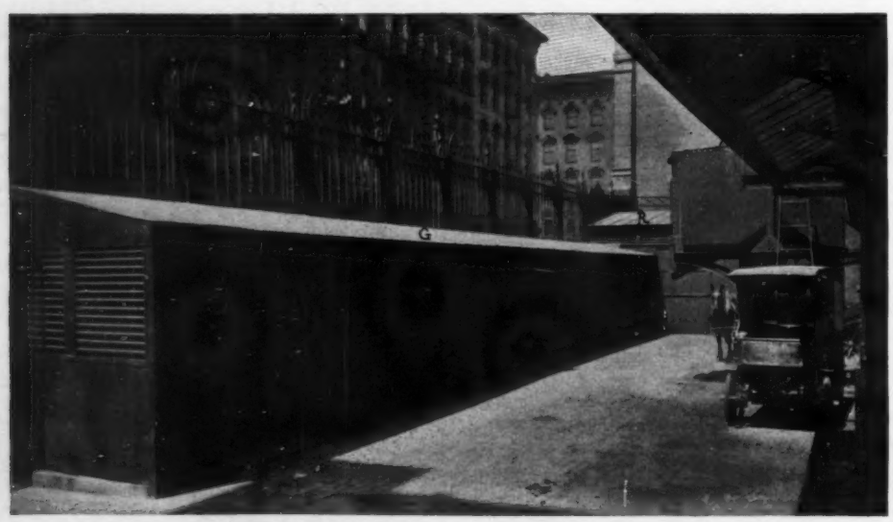
WELL-EQUIPPED REPAIR SHOP OF THE CHICAGO PUBLIC LIBRARY

Chicago Library Service

ONE of the best demonstrations of the success obtainable with a motor car delivery service is the system now employed by the Chicago public library in maintaining the circulation of over a million books a year from the main department in the loop district through the numerous sub-stations scattered about the city. In 1904, with five horse-drawn delivery wagons, 662,896 books were circulated. Today, with five Knox motor cars, about 1,300,000 books, over 100 per cent more, are circulated and at less cost than with the horse-and-wagon service of 1904. The efficiency of the service has increased with the demand.

Owing to the increasing demand for books, and the necessity of enlarging the number of sub-stations and reading rooms, the five delivery wagons then employed were found inadequate to do the work. Therefore, in October, 1904, a motor car was purchased, which succeeded in displacing two of the delivery wagons. In June, 1905, two more motor cars were added, and the horse-drawn vehicles eliminated from the service; and in December of the same year the fourth car was installed. The fifth car was taken on in May, 1907, and in July of last year a sixth was annexed, so that now, although five cars do the work, one is held in reserve or used in emergencies and while one of the others is being overhauled. In the following table is shown the increase in circulation since 1904:

Year	Books	Year	Books
1904	662,896	1907	844,415
1905	788,657	1908	954,000
1906	846,802		



COURT YARD OF THE CHICAGO PUBLIC LIBRARY

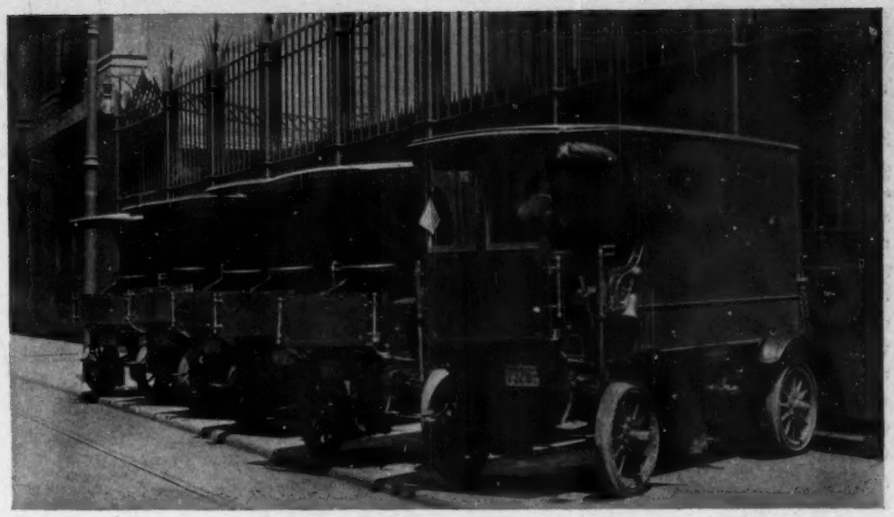
Many Books Circulated

In 11 months of the year ending May, 1909, 1,022,487 books were circulated. By comparing the statements, showing the expenses of the delivery service of 1904 and 1906, for the year ending October 31, 1904, the total horse-drawn wagon expense was $6,770.37; whereas the motor car expense for the year ending in October, 1906, was $98.98 less. Then, referring to the above table, it is found that in 1906 183,906 more books were circulated.

Owing to changes and consequent congestion in the clerical department of the library, it has been impossible to secure the figures covering the expenses for 1907 and 1908 in time for this issue. Without these W. A. Purer, who is in charge of the distributing department and who is responsible for the adoption and success of the motor car service, very reluctantly parted with the statements contained herein, claiming they do not do justice to the system. One must bear in mind that during the greater part of the year ending in 1906 the service was still in the experimental stage and the drivers untrained, consequently repairs and replacements were excessive.

An idea of the result of a few months' experience with the first car purchased may be obtained from part of a report made to the librarian by Mr. Purer early in the year of 1905 in which he said: "I

have completed schedules for delivery with three motor cars doing the work which we are now doing with three wagons and one motor car. I find that we could save about $2,670 a year in this work by using motor cars, rating the running expenses of a car at $130 per month. In figuring this I have worked on the supposition that there would be a reserve car to do relief work. I find that to keep the machine in good condition it should be overhauled at least once a month. This we could do during spare time—without cost—if there was an extra machine we could use for a day or so. I must say that so far the cars have given perfect satisfaction and that the only delays that have occured have been owing to the batteries or such minor repairs which could have been easily done if we had a place to work or had time to look after the machine, which we would have if we had one car in reserve."



CHICAGO PUBLIC LIBRARY'S FLEET OF KNOXES

Now Have a Repair Shop

Shortly after this report was made, a repair shop was built in the court of the library. It is constructed chiefly of corrugated iron, fire and waterproof throughout, and equipped with a lathe L and drill-press D driven by an electric motor M, a movable chain block-and-tackle B attached through rollers to a rail overhead, an outfit for charging storage batteries C, a generous assortment of smaller tools, and the gasoline pump O from the underground storage system. As previously stated, two cars were purchased in June and an extra car in December to complete the system, making it possible to dispense with the horse-and-wagon service entirely.

Since the elimination of the horse-and-wagon service, the work has been extended in every direction. Where previous to 1905 there were thirty-two sub-stations, each of which was visited but once a day, today there are seventy-eight sub-stations, most of which are visited twice a day. To carry on this service with horse and wagon, with the same efficiency as obtained with the motor cars, would be almost impossible, even though eight wagons and more than double the number of horses were employed, while the increase in cost would be enormous. In the first place, as it would be impossible to keep the horses and wagons in the neighborhood of the library, it would be necessary to have stables in different portions of the city, which at best would be some miles distant, requiring that the drivers be on duty at a very early hour in order to leave the library at 7 o'clock in the morning. Furthermore, as the average speed of a horse and wagon, including stoppages, is 4 miles and hour, the speed of a motor car under the same conditions is 8 miles per hour. Therefore no approach to the present schedule could be attained.

Two Trips Made Daily

At the present time each car makes two trips per day, a long and a short one. On the long trip all the stations on the route are visited, while on the second trip only the more important stations are included in the itinerary. A schedule such as shown in Fig. 1 is arranged for each car, and the cars are now running so regularly that children may be seen approaching and waiting at the stations for the arrival of books for their mothers and sisters. The five working cars, which are kept in the court of the library, leave every morning at 7 o'clock, make their deliveries and collections, and are due back at the library at intervals between 9 and 10:30 o'clock. For the afternoon trip the departures are made between 11:30 and 2 and the last car in is due to return before 5 o'clock in the afternoon. The average mileage per day for each car is a little less than 40 miles, which is made on a schedule of about 5½ hours. Each driver is required to work 8 hours per day, no more, no less, except in cases of emergency, which are rare, and for which they are paid overtime. The 2½ hours outside of the running time is devoted to the care of the car, that is, in cleaning and oiling the engine and running-gear, and making necessary repairs and adjustments. The washing and polishing is performed by a colored artist who stands at the head of his profession.

Two points which are emphasized by Mr. Purer, and to which he attributes much of his success, are: That he neither overloads nor overworks his service; and, having carefully chosen and trained his drivers, he hangs on to them. The driving schedule is light and can be easily maintained in all kinds of weather; the cars are provided with equipment for protecting the drivers against the elements; and every effort is made to improve the

COMPARATIVE TABLES SHOWING COST OF MAINTENANCE OF HORSE AND MOTOR SERVICE

Motor Car Expense for Year Ending October 31, 1904

	Parts	Wages	Repairs	Oil and Grease	Miscellaneous	Gasoline	Totals
November	$ 114.06	$ 195.00	$ 44.02	$ 37.10	$ 57.97	$ 75.90	$ 524.05
December. 1905	10.50	195.00	21.85	.....	63.23	61.30	351.88
January...1906	65 85	228.55	65.45	23.63	63.41	67.85	514.74
February	205.31	239.10	38.90	.....	64.00	78.20	625.51
March	50.72	265.17	88.49	22.50	56.13	75.90	558.91
April	132.56	257.83	22.45	.....	29.07	86.00	527.91
May	117.96	254.35	40.64	22.50	22.55	.....	458.00
June	145.55	287.58	24.30	.....	37.79	64.50	559.72
July	130.77	290.00	16.08	.....	41.28	54.60	532.73
August	108.55	290.00	3.95	22.73	19.10	84.50	528.83
September	323.40	290.00	3.95	.....	21.94	59.80	699.09
October	238.04	280.03	146.10	23.18	42.87	59.80	790.02
Totals	$1643.27	$3072.61	$516.18	$151.64	$519.34	$768.35	$6671.39

Horse and Wagon Expense for Year Ending October 31, 1904

	Boarding	Shoeing	Wages	Medicine & Veterinary	Miscellaneous	Extra Horse Hire	Totals
November	$ 231.66	$ 28.00	$ 246.66	$ 24.00	$ 24.45	$ 6.00	$ 560.77
December. 1903	239.52	34.05	246.72	8.00	19.75	.....	548.04
January...1904	241.29	41.75	246.87	17.75	8.60	1.00	557.26
February	235.87	41.75	250.00	4.00	.50	.....	532.12
March	187.00	26.75	248.48	8.35	15.85	.....	486.43
April	177.37	40.35	250.00	2.00	43.30	.....	513.02
May	170.00	28.35	260.00	22.50	106.65	.....	587.50
June	269.90	28.50	301.67	.....	133.55	.....	733.62
July	203.68	31.60	310.00	7.00	79.65	7.50	639.43
August	208.60	32.50	292.25	.....	33.60	19.00	585.95
September	207.03	28.75	260.00	46.00	6.95	5.50	554.23
October	184.00	18.00	260.00	10.00	.....	.....	472.00
Totals	$2555.92	$380.35	$3172.65	$149.60	$472.85	$39.00	$6770.37

system by improving the conditions under which the drivers must work.

Wages of the Drivers

Four of the drivers now driving cars have been in the service over 5 years, and drove wagons before the cars were installed. As wagon drivers these men received a salary of $50 per month; when they were given charge of a motor car they received $75 per month, which amount has been recently raised to $79. The other drivers were taken on at a salary of $60 for the first year, with a stipulated raise per year. Each man gets 3 weeks vacation each year, after which he is required to overhaul his car complete. It may be of interest to note that, in his report of 1905, Mr. Purer figured that a car should be overhauled once a month, he now finds that a thorough overhauling once a year is all that is necessary. This is due to the knowledge which the drivers now have of the mechanical construction of their cars, the pride and care with which they have been trained to operate them, and the improved conditions of the roads over which they travel.

Now, although these cars are allowed to use the boulevards, a privilege at present denied the ordinary commercial vehicle, and notwithstanding the fact that every effort is made to use the best roads, much of the territory covered by these cars necessitates traveling on some of the poorest streets in the city. The car tracks are used extensively by these vehicles, and although hard on tires, this item is rendered null by the increased life of the machinery. And as the street railway companies are now required to lay grooved rails much of the excessive wear on the tires will be eliminated.

An idea of the work done by the Grand Crossing wagon may be had from the following table:

GRAND CROSSING TRIP

From	To	Miles	Minutes	Time
Leaves library at 7 a. m.				
Library	12S	4 ¼	30	7.30
12S	25S	1 ½	13 ¼	7.43 ¼
25S	11S	2	17 ½	8.00 ¾
11S	26S	1 ¾	15 ⅝	8.16 ⅜
26S	18S	1 ⅜	12 3-16	8.28 5-16
18S	17S	1 ½	13 ¼	8.41 9-16
17S	5S	2	17 ½	8.59 1-16
5S	13S	1 ¾	15 ⅝	9.14 7-16
13S	3S	1 ½	13 ¼	9.27 11-16
3S	2S	1 ¾	15 ⅝	9.43 1-16
2S	1S	1 ¼	11 ⅛	9.54 3-16
1S	L.	2	17 ½	10.11 ¾
		23 miles		3.11 hours
Leaves library at 2:30 p. m.				
Library	2S	3 ¼	27	2.57
2S	3S	1 ¾	15 ⅜	3.12 ⅜
3S	13S	1 ½	13 ¼	3.25 ⅝
13S	5S	1 ¾	15 ⅝	3.41
5S	17S	2	17 ½	3.58 ½
17S	11S	1 ⅛	10 1-16	4.08 5-16
11S	L.	5 ¾	35 ½	4.44
		16 ⅛ mls		2.14 hours

DETROIT USING TAXICABS

One of the most interesting features of the season in Detroit has been the tremendous headway which has been made locally by the taxicabs, the rapid multiplication of which on Detroit's streets has virtually ruined the old horse-drawn cab business in the city. Within the past 6 months the number of concerns operating taxis in Detroit has increased from one to five, and these are all rapidly increasing the number of cars which they operate. Several of the local retailers find it very profitable to operate a taxicab or two, and instances are not rare in which provident chauffeurs have left private employ to purchase a taxicab which they run themselves, such instances being not included, of course, in the list of the large liveries mentioned above. An advertising campaign of considerable importance is on between the rivals, all of whom, however, apparently find plenty to do to keep the registers moving. The most eloquent evidence to the growing popularity of the taxicab as a method of speedy and satisfactory transportation about the city is the panic which has apparently struck the liverymen who have for years found it profitable to maintain cab stands. Several of these have gone out of business during the last three months, the most prominent instance being that of the Haskins barn on Bagley avenue, long one of the largest in the city, which has just disposed of all its stock of horses, cabs, harness and other equipment, at private sale, and the doors of which are now closed. This concern operated something like a score of cabs, and this was the main feature of its business. The cab-users went over en masse to the taxicabs and the horse-drawn vehicles stood idle in front of the city hall until the managers of the enterprise determined to no longer continue a losing venture.

FACTS FROM PARIS

Figures of unquestionable accuracy were given out recently by the director of an old cab and omnibus company of Paris which were secured from the municipal records and in every way strengthened the utterances of the discouraged owner of horses who claimed that if the conditions now prevailing continue another 2 years it will mean almost ruin for those companies that still are exclusive friends of the venerable horse and do not want as yet to welcome the motor. The city's statistics concerning the number of horses used exclusively for cabs and omnibuses, and thus not including any other industrial vehicles, were started in 1895, while the first city records of the number of motor cabs or motor buses or other motor vehicles used exclusively for the conveyance of the public were taken in 1899.

STATISTICS FROM PARIS

Year	Horses	Increase or Decrease	Motor Cabs and Motor Buses	Increase or Decrease
1895	87881	.....	.....	.....
1896	89139	*1258	.....	.....
1897	90595	*1456	.....	.....
1898	93026	*2431	.....	.....
1899	93652	* 626	288	.....
1900	98284	*4632	618	* 330
1901	96698	†1586	1143	* 525
1902	91976	†4722	1673	* 530
1903	90147	†1829	2374	* 701
1904	85269	†4878	3146	* 772
1905	84243	†1020	4067	* 921
1906	83458	† 791	5058	* 991
1907	81992	†1466	6101	*1043
1908	79460	†2532	7214	*1113

It will be seen from the appended table that from 1895 to 1900 there has been a steady increase in the number of horses being used for cabs or buses. It is, however, quite probable that the increase in 1900 over the preceding year was practically entirely due to the world's fair of 1900. Since 1901 there has been a steady decrease, totalling 18,824 up to and including 1908. On the other hand, during the same period of 8 years, the number of horseless vehicles increased from 1,143 to 7,214, or 6,596. According to the opinion of men connected with the horse-cab and bus business there will not be 70,000 horses in service within another 18 months, while the motor cars will not be far from having attained the 10,000 mark. One old company which had 16,838 horses in use in 1900 only had 9,552 at the end of last year, while another company which had 13,708 in 1900 had but 11,156 when this year began.

At the recent annual meeting of the Compagnie Generale des Voitures, of Paris, the president of the company, in the course of an address, made lengthy reference to the development of the motor cab and its relation to the traffic conditions of the great French metropolis. Up to about a month ago the Compagnie Generale des Voitures had in actual operation or service 250 8-10-horsepower two-cylinder cabs and ninety-five 10-horsepower four-cylinder cabs. In addition there were 11,000 horses on hand for the regular cabby service. At the end of June, provided promised deliveries are made there will be in operation 350 of the two-cylinder motor cabs and by the end of the present year there are to be 500 in operation. Notwithstanding the increase in motor car cabs, the company employs at the present time a larger number of horse drivers than at the same period last year, the number at present being 3,850.

That the Parisian is spending more money for the motor traction is attested by the fact that statistics show that while in 1907 about $3,100,000 was spent with the various motor cab or taxicab companies, the amount almost was doubled in 1908, the total sum spent for motor vehicle rides being $6,000,000. Thus the average spent by each Parisian is estimated to have been in 1909 about $2.10, in 1907 it was $1.12.

However, if there has been more money spent, statistics also show that the average receipts from the public have decreased, this average being 36 cents per passenger in 1908, while in 1907 it was 50 cents.

It appears that January 1, 1897, there were approximately 11,000 horse cabs in operation in Paris. Ten years later in 1907 there were only 9,700 and at the beginning of February, 1909, there were but about 8,500 in operation.

The Motor Car Repair Shop

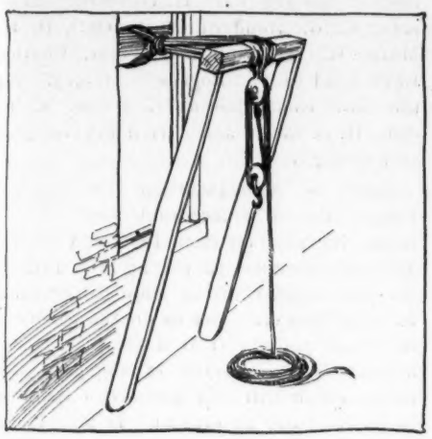


Fig. 1

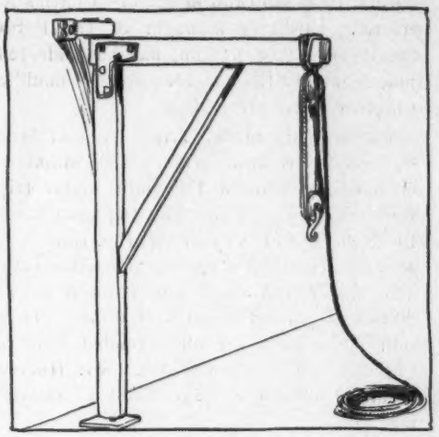


Fig. 2

Brace Up Sagging Frames

THERE are many old cars now in use the frames of which sag to such an extent that to maintain the proper alignment of their engines, clutches and gearboxes, is almost impossible. The placing of shims under the proximal ends of the motor and gearbox, will serve to bring those parts into alignment for a limited time; but this does not strengthen the frame; therefore, why not eliminate the source of the evil by substantially bracing the frame? Figs. 3 and 4 illustrate two methods of bracing up weak frames. In Fig. 3, the truss rods are almost entirely hidden from view, being concealed for the most part inside the frame. These rods may be made from ½ or ⅝-inch stock as the case may require, and should be made adjustable at both ends. The anchor blocks can be forged from ⅝-inch stock, and either riveted or bolted to the frame. The king-post should be placed under the cross member supporting the transmission, near where it joins the side members. The method shown in Fig. 4, known as a queen-post truss, is practically the same, except that the rods are directly under the side members of the frame, and two posts are used. This form is used when bracing a car in which there are two cross members near the center of the chassis.

There are many repair shops in which much difficulty is experienced in removing motors and gearboxes from cars owing to the fact that there are no provisions made for suspending a chain block-and-tackle from the ceiling. For those working at this disadvantage two styles of cranes, which may be easily erected, and at small cost, are shown in Figs. 1 and 2. The structure represented by Fig. 1 is rather crude but serves its purpose. The swinging crane illustrated in Fig. 2 also is of simple construction, but more convenient than the other because of its horizontal movement. The vertical column is supported in a cup bearing at the bottom and secured to a wall bracket, or a similar bearing at the top making it possible to swing the load from side to side and to fold the crane against the wall, out of the way, when not in use. Chain-blocks are generally used instead of rope.

Lost Motion in Cars

Lost motion takes place when relative parts are lacking in harmonious adjustment. The effect of lost motion in any machine is usually to rack the machine to pieces long before it would wear out if proper attention were given to the alignment, lubrication, and adjustment of its parts. Where there is lost motion there is often danger; excessive wear, noise, and inefficiency are its accompaniments; and many a serious accident has been traced directly to neglected lost motion in the steering gear. If the question were asked "Why is the repair shop?" the answer would be, "Chiefly because of lost motion." The life and safety of any bearing decreases as the lost motion therein increases. Therefore, do not neglect lost motion. Lost motion in a connecting-rod bearing increases rapidly and it is attended by a disagreeable knock; and if neglected will destroy the bearing, and probably cause the rod to break loose from the pin and break things up in general.

Smoke to Locate Punctures

There is a way of locating a small puncture in an inner tube without the inconvenience of placing the inflated tire in water and getting it wet. This method consists of blowing smoke into the tire. Deflate the tube entirely, and before replacing the valve blow as many mouthfuls of smoke into it as possible; replace the valve and blow up the tube to the required pressure with a pump and the smoke will issue from any leaks therein.

Twine Useful in Repair Kit

A ball of twine is often a very handy article to have about the car, and many are the uses to which it may be put. It may be used to lash a secondary wire to a plug in case the terminal is broken; a lost nut may be temporarily replaced by wrapping the projecting end of the stud or bolt with it; a nut which is loose on the thread may be most satisfactorily fastened by winding a little twine into the bottom of the threads over which it fits. Leaky gasoline connections may be rendered tight by packing with twine soaked in shellac; and twine and white lead are used extensively in packing water connections and stuffing-boxes.

Graphite Well Used

After scraping in a set of bearings, it is a good policy to rub the bearing surfaces with flaked graphite. Graphite will fill up the pores of the metals and render their surfaces more smooth. The friction reduced in this manner will often prevent a bearing that is a little tight from seizing and allow it to work in all right.

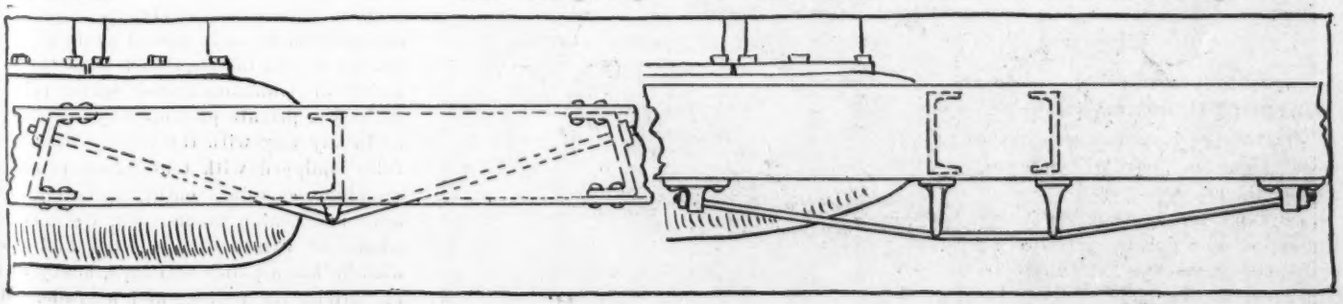


Fig. 3

Fig. 4

From the Four Winds

N S E W

Garrity Made Club Manager—Charles A. Garrity, formerly manager of the Point Shirley Club, of Boston, has been elected manager of the Worcester Automobile Club, of Worcester, Mass.

Finish Long Motor Trip—Mr. and Mrs. George M. Huston arrived in Columbus, O., recently after a 1,290-mile motor trip from Rockledge, Fla. The trip was made in 7 days, but a part of the time was spent in crossing a swamp 200 miles long. The water and mud was from 6 to 18 inches deep for the entire distance. They will leave soon for an extended tour to Chicago and western states. Mr. Huston formerly owned a large hotel at Columbus, O.

Lands 100 Cars—One hundred cars belonging to members of the Worcester Automobile Club, of Worcester, Mass., have been offered to the board of governors of the club for service on orphans' day, June 23. F. A. Easton, chairman of the runs and tours committee of the club, is in charge of the day and estimates that machines have been secured sufficient to carry every orphan child in the city on that date. The itinerary of the run is not yet completed.

Show On at Cleveland—The Cleveland industrial exposition, intended to boom Cleveland manufacturers and their products, opened Monday night with the motor car trade holding the center of the floor. Few men outside the trade realize to what an extent this business has grown of late years, and many expressions of surprise were heard even from other manufacturers. All the cars made in Cleveland are on exhibition, while the many parts and accessory manufacturers are also located in the enormous buildings housing the exhibits. In addition to the Stearns, Peerless, Royal, White, Gaeth, Winton, Baker, Rauch & Lang and Brock electric, the Perfection Spring Co. and many other well known to the trade have exhibits.

Badgers On a Tour—Nineteen cars participated in the first tour of the Wisconsin Valley Automobile Club, from Wausau to Stevens Point, Wis., on Memorial day, carrying 100 passengers. Just before the start, S. L. Livingston, a member, presented each member with a touring cap with the monogram at the front. This will be the official headgear on all tours.

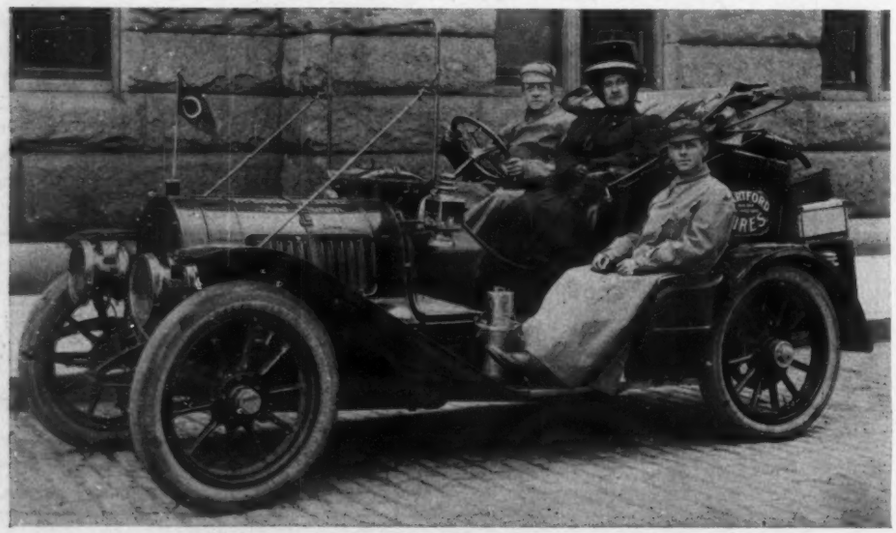
Useful In Strike Times—Last week was a banner one for the Philadelphia taxicab companies and the numerous concerns that hire out motor cars. The trolley strike kept them on the jump 24 hours a day and all hands did a land-office business. Many compassionate motorists invited tired working women and children into their cars and whisked them home in jig time. It was an ideal object lesson of the utility of the motor car at such a time, when the usual means of transportation were practically at a standstill.

Independents Hold Meetings—Only routine matters were discussed at the regular monthly meeting of the committee of management of the American Motor Car Manufacturers' Association held at the New York headquarters June 2. At the show committee meeting, a number of plans were perfected for the tenth show, which opens in Grand Central palace on New Year's eve. These plans included new schemes of decoration, and a new arrangement to increase the amount of space. The Importers Automobile Salon will as usual occupy a section of the main floor, while the Motor and Accessory Manufacturers will again occupy about 16,000 square feet on the first balcony. At the meeting were H. O. Smith, chairman; C. G. Stoddard, R. E. Olds, S. H. Mora, W. H. Van der Voort, Charles Lewis and G. V. Rogers, secretary. At the show committee meeting were R. E. Olds, H. O. Smith and Alfred Reeves, general manager.

May Be Amalgamation—The newly-formed Boston Motor Club has not yet taken its new quarters in the Victoria. There is a clause in the by-laws forbidding the expenditure of more money than is in the treasury, and as all the members have not paid in their dues, the officers do not feel warranted in engaging the rooms which will cost more than there is in the treasury at present. It would not be surprising if there were an amalgamation with the Bay State club after all.

Boston Lands de Palma—The Bay State A. A. has secured Ralph de Palma as one of the attractions for its race meet on June 17 at Readville. The race committee is now trying to secure Charles Basle to meet de Palma in a special match race. If he cannot be secured Joe Downey may be engaged if the committee finds there is a racing car available for him. The trophies for the race are among the finest that have ever been secured. A car never before on the market will make its debut in the races. It is the Morse and is being built at South Easton, Mass. The makers intend to place a number of them on the market and one of the machines will enter the stock car events.

Morse On Way to Coast—On Tuesday, May 18, I. H. Morse, of Lowell, Mass., accompanied by Mrs. Morse and a mechanic, left Lowell, Mass., on a transcontinental tour which will take them to the Alaska-Yukon-Pacific exposition at Seattle and return to Lowell. He is driving his Pope-Hartford car in which last season he covered many thousand miles in long-distance touring. The distance is estimated at approximately 3,700 miles from Boston to Los Angeles and from the latter city to Seattle, about 1,400 miles more. He has figured that he will average about 100 miles a day running time, covering considerably over that time in the east and in sections where the roads are good. He is scheduled to be in Lowell again on September 6. As distinguished from the majority of transcontinental tours, this is entirely a private pleasure trip unconnected in any way with the trade. His car is fully equipped with tent, blankets and a complete camping outfit, including fire arms and fishing tackle. For the sections where he will encounter sand and deep mud he has a pulley and rope, heavy hickory sticks for prying, and a spade. Mr. Morse is an experienced huntsman and



I. H. Morse, Touring to Seattle in Pope-Hartford

carries with him rifle, gun and fishing tackle. To provide for sections where medical aid is not convenient he has a first aid outfit.

Will Have No Run-Off—The triple tie which resulted in class C in the recent amateur endurance run of the New Jersey Automobile and Motor Club will not be run off. The club will present a cup to each of the three clean-scorers—F. A. Croselmire's Locomobile, F. L. Kramer's Jackson and W. C. Crosby's Marmon.

Officer Gets In Trouble—The Columbus, O., Automobile Club is investigating a peculiar action which resulted in severe injuries to Special Officer Harrigan, selected by the club to see that the motor laws are not violated. Officer Harrigan, who is a small man, spotted a large touring car without the necessary tags and camped out until the owner appeared. When the officer sought to place the owner under arrest, the latter started the engine and ran over the guardian of the law, fracturing four ribs and producing many bruises. The owner disappeared without his identity becoming known.

John H. Manning Dead—John H. Manning, a member of the Massachusetts highway commission since 1900, died at a hospital in Boston last week following an operation for abdominal trouble. His death is a distinct loss to the state, for Mr. Manning was one of those broad, liberal men who believed in doing things right. He represented the western part of the state on the commission, coming from Pittsfield. Through his efforts some of the finest highways in Massachusetts have been planned. He was always ready to meet the motorists half way when it came to discussing motor laws and regulations and he was ever a welcome guest at motor banquets. The funeral was attended by many motorists in the Bay state.

Women on Long Tour—Mrs. Alice R. Ramsey, who will drive her Maxwell car from New York to San Francisco, started Wednesday on what is undoubtedly the longest continuous trip ever taken by a woman at the wheel of a motor car. From the start to the end, Mrs. Ramsey will do the driving and, furthermore, will have to make alone all tire repairs, tire changes and such, for while she will not be alone in the car, she will be unaccompanied by man. It is this that makes the trip all the more interesting, for it will be the first time that a woman has ever attempted the long journey between the two cities under these conditions. Unassisted she will have to pick the route, guide the car across the Rocky mountains and in fact will travel over roads and routes that would tax an expert male driver, yet alone she will do all this and with confidence, too, of reaching the Pacific coast without trouble by July 16. In the car with Mrs. Ramsey are Mrs. N. R. Powell, Mrs. W. Atwood and Mrs. H. Jahns, all of Hackensack, N. J., all enthusiastic motorists.

FRANKLIN THAT HAS BEEN PUT IN RAILWAY SERVICE

Mrs. Ramsey is one of the best known women motorists in the East. She is president of the Women's Motoring Club of New York and a leader of the women's section of the Maxwell-Briscoe Motor Club.

More Pathfinding—The second leg of the eight-barreled endurance run which will be held in Georgia next fall has been worked out. This lap was the Atlanta-to-Augusta road. The southern branch of the White company again furnished the pathfinder and the expedition went through in good style. There were enthusiastic receptions at all points.

New Glidden Ruling—A new ruling concerning the Glidden tour contests has just been made which will be highly pleasing to the manufacturers who enter cars and to the people of the country traveled through. The decision has been made to have the names of the cars, as well as their numbers, on the signs they carry. Hitherto the signs on the cars had only the words "A. A. A. Tour" and the year, and the entry number of the car.

Fine Electric Performance—Just to show that there was no fluke in its recent fine performance in the Quaker City Motor Club's roadability run to Atlantic City, when it covered the 67-mile route in 4:35:40 on one charge, the Woods electric victoria on Tuesday last was sent over the same course, this time for a round-trip record. The journey to the shore was accomplished in 3 hours 45 minutes and the return trip in 4 hours 42 minutes—the entire 134.3 miles without recharging the batteries. Not only this, but George Daly, the driver, makes affidavit that he continued to run the car until the odometer had registered 152 miles, when the power was exhausted. The following Thursday another trip was made to Atlantic City, this time by a roundabout course of 89.2 miles. This was accomplished in a trifle over 5 hours at an average speed of 17.6 miles an hour, and the car was run around Atlantic City until the odometer registered 104.2 miles, when the batteries were recharged.

Syracuse Wants Track Meet—Efforts are being made to complete arrangements for a track meet at Syracuse, N. Y., during state fair week next September on the grand circuit track at the fair grounds. C. Arthur Benjamin, president of the Syracuse Automobile Dealers' Association, has the matter in hand.

Worcester Committees Named—Chairmen of committees for the year in the Worcester Automobile Club, of Worcester, Mass., have been appointed by President John P. Coughlin as follows: Runs and tours, F. A. Easton; laws and ordinances, John P. Coughlin; highways, Walter E. Hassam; house committee, Chester E. Green; signs, A. H. Inman.

Built for Railway Use—Back and forth across the border line of New York and Pennsylvania runs a motor car which, though built for touring upon the highways, has been so remodeled that it can travel upon steel rails as the daily associate of a lot of interurban trolley cars. Taking a Franklin touring car, the Warren & Jamestown Street Car Co. provided it with flanged wheels, instead of pneumatic tires, and with a rigid front axle. A wooden tonneau, arranged with side seats and a rear entrance, made accommodation for several employes, and the car was ready for use in getting quickly over the line in response to trouble calls. It is called into service whenever there is an emergency anywhere along the route requiring quick action in the way of repairs or attending to an accident. The car really belongs in Pennsylvania, as the company headquarters are in Warren. The other town from which the company takes its name is well over into the adjoining state.

Among the Makers and Dealers

Adds the National—The Mora Sales Co. of Syracuse, N. Y., has been given the agency for the National, which will be sold along with the Regal and Mora.

New Venture in Beaumont—The Houston Motor Car Co., of Houston, Tex., has opened up a branch at Beaumont, Tex., which will be known as the Beaumont Motor Car Co. Louis De Rango has been appointed manager of the Beaumont branch.

Kelsey Now a Benedict—C. W. Kelsey, sales manager of the Maxwell-Briscoe company, who was married last week, sailed on Friday for Europe, where he will spend his honeymoon. He took along a 22-horsepower Maxwell, in which he and his bride will tour for 6 weeks, at the same time giving the car a thorough try-out over the foreign roads.

Finds Drivers Guilty—T. A. Perrion and James L. McKenzie, two of the four drivers who were charged with larceny by the Taxicab Service Co., of Boston, by changing the readings of the meters, were found guilty by Judge Bennett of the Boston municipal court last Saturday. They were both sentenced to 3 months' imprisonment. Cornelius F. Lyons and Benjamin F. Young had their cases continued until later. Perrion and McKenzie appealed their cases and they were held in $500 each for the superior court.

New Venture in Toledo—Three new electric runabouts now in the course of construction and which are expected to be completed within the next week or so, will determine whether or not Toledo is to have a new plant. The cars furnish something new in electric carriages. They will be shaft-driven, with new batteries that are expected to run the cars 100 miles on one charge. The new concern is known as the Ohio Electric Carriage Co., and the officers are: President, A. M. Chesbrough; vice-president, R. R. Lee; secretary, Frank Suydam; treasurer, James B. Bell; general manager, H. P. Dodge.

Four Electric Garages—The growing popularity of the electric motor car in Detroit has been one of the features of the local season and the city now boasts for the first time four garages devoted exclusively to the use of electric cars. The latest is a new structure, very near completion, on East Grand boulevard, near the Belle Isle bridge. This is being built for the Anderson Carriage Co., manufacturers of the Detroit electric, and is intended to relieve the stress of business in evidence at the firm's Woodward avenue garage. The new garage is situated very close to the center of local motoring activity, in particularly effective reaching distance of Belle Isle and Grosse Pointe farms. H. A. Stevenson will be the manager of the new branch.

Moves to Detroit—The Hyatt Roller Bearing Co., of Newark, N. J., has moved its general sales offices from that city to the eighth floor of the Trussed Concrete building, Detroit.

Toledo's Latest—Madison avenue, Toledo, has a new garage, which was opened last week in connection with the White Co.'s sales rooms. The place was opened by Wheaton & Lindsay, who will conduct not only a garage but a general repair shop for motor cars.

Otis Cook Promoted—Otis R. Cook, since September last manager of the tire department of the Federal Rubber Co., Cudahy, Wis., has just been appointed general manager, his jurisdiction having been extended to include the mechanical rubber department in addition to the tire department. Cook will make his headquarters as before, at the company's Milwaukee office, Oneida and Milwaukee streets.

Elects Its Officers—At the first annual meeting of the Waukesha Motor Co., of Waukesha, Wis., following the reorganization, C. A. Haertel was elected president; E. R. Estberg, vice president; S. A. Perkins, treasurer; Harry L. Horning, secretary and general manager; Fred Ahrens, general superintendent. Charles E. Nelson is the remaining director. The new factory will cost $10,000 and will occupy a site bordering on both Northwestern and Milwaukee road main tracks.

Knox Illumination—An accompanying illustration is that of the show window of the Knox Automobile Co.'s branch at Chicago. It is an example of the effect that may be produced by the proper placing of electric lights, a scheme designed for this window by N. H. Van Sicklen, Sr., and installed by Charles Price. The top panes of glass are lettered in black with a stippled white painted background. Immediately back of this glass are placed twelve frosted Tungsten lights, evenly spaced and shaded by satin-finished Holophane reflectors, these latter so diffusing the rays that no spots are visible. Twelve lights in a porcelain-lined reflecting trough are so placed across the bottom of the window—at an angle—that the rays meet at about 6 feet in height, approximately 10 feet from the window. The ceiling is heavily beamed and behind the first two there are placed five lights on each, frosted globes and reflectors being used as above the window. The effect is a beautifully illuminated window, and the store is, as the photograph shows, illuminated for its entire depth. The photograph reproduced on the next page was taken after nightfall.

Crossley Goes to Peru—William Crossley, formerly of the Cadillac Motor Car Co., Detroit, Mich., has taken charge of the factory end of the Model Automobile Co.'s business as superintendent.

Hercules Expanding — The Hercules Electric Co., Indianapolis, Ind., has built an additional building and put in machinery equipment, which will increase its capacity not less than 50 per cent, and also is making preparations to put up another plant for making its own magnets.

Blake Again Convalescing—E. P. Blake, New England representative of the Jackson, is able to be out again on crutches after his second motor accident, which occurred recently while on his way to the Yale hill-climb. He has had two very narrow escapes within a few months, both of which landed him in the hospital, the first one in March and the second in May, a car turning over and throwing him out both times.

Chalmers Agencies Closed—The sales department of the Chalmers-Detroit Co. is busy these days closing contracts with dealers over the country to handle the Chalmers-Detroit cars during the next year. Up to date contracts have been closed with the following firms in their respective cities as distributors of the 1910 cars: Western Motor Car Co., Los Angeles, Cal.; Taylor Motor Co., Hutchinson, Kan.; Wetmore & Rogers Auto Co., Sioux City, Ia.; Zell Motor Car Co., Baltimore, Md.; J. H. Ratliff Auto Co., Cincinnati, O.; Levy & Hipple Motor Co., Chicago, Ill.; C. A. Fritz, Zanesville, O; T. A. Bryson, Savannah, Ga.; Stitt-Dillon Motor Co., Hastings, Neb.; O. C. Magann, Catlettsburg, Ky.

Absorbs Its Selling Organization—The Cameron Motor Co., organized last fall with New York capital to control the output of Cameron cars from the factories at Beverly, Mass., and New London, Conn., has been absorbed by the old company. The capital of the Cameron Car Co. of Beverly, Mass., has been increased to $500,000 and the affairs of the enlarged organization will be handled by E. S. Cameron, general manager, W. T. Marsh, treasurer, and H. W. Doherty, sales manager. All four-cylinder models will be built in the Beverly plant, the sixes in New London, and by the acquisition of W. T. Marsh, who is the controlling factor in the American Motor Co. of Brockton, Mass., manufacturer of motor cycles, Cameron gains the assistance of a third plant, where larger quan-

tities of smaller parts will be manufactured. Arrangements are being completed for an output of 5,000 cars between September 1, 1909, and July 1, 1910.

Baker Changes—C. F. Baker, who for several years past has been identified with the Pope company at Toledo, Ohio, as traveling representative, has just formed a connection with the American Motor Car Co. of Indianapolis. It is understood Mr. Baker is to become sales manager of the latter company.

Cleveland Concern Enlarging — The growing demand for the parts manufactured by the Electric Welding Products Co., of Cleveland, has made it imperative for it to increase its facilities to properly handle the trade. The company has now just completed a new three-story addition, which will give it nearly double the present manufacturing floor space and the greater part of this new addition will be equipped to handle gas engine and motor car parts.

New Cleveland Concern—The White Motor Car Co. of Cleveland, O., has been incorporated, taking the plant of the old French-American Motor Car Co. The new company is turning out a gasoline car of moderate horsepower. The capacity of the plant is very small, and the entire output will probably be taken up by local people. The company bears absolutely no relationship to the White Co., maker of the steam car. The White Motor Car Co. has for its principal backer W. B. White of Cleveland, who formerly manufactured the French-American car.

Big Rambler Business—It is stated by Thomas B. Jeffery & Co. that more than twice as many four-cylinder Ramblers have been sold this year than during the corresponding period of last year. The largest increase dates from the introduction of model 34. One thousand model 34's are in use, with the result that the new models 44 and 45 are extremely popular. The volume of Rambler sales for the Rambler fiscal year to date is just double that of a year ago. Another important fact is that 75 per cent of the buyers of the new Ramblers are specifying the Rambler spare wheel.

Ford Will Use Green—The announcement is given out at the plant of the Ford Motor Co. that, as soon as the present supply of red and gray bodies is exhausted, the firm will employ but one standard color for its output. This will be Brewster green, which is said to have been proven by repeated tests as the most durable color under varnish. In explanation of the move the Ford people state that it is made in order to more easily accommodate those owners who desire to use different bodies on their car at different times of the year. With the guards, fenders and other fixtures in one color it will be possible to use an enclosed body in winter and an open body in the summer without delay in securing the desired equipment or a necessity for refinishing of any part.

Barclay Takes the Hudson—The Minneapolis agency for the Hudson, the new Detroit car, has been secured by the Barclay Automobile Co., agent for the Chalmers and Thomas lines. Mr. Barclay on a recent trip to Detroit, closed for 300 of the Hudsons. He also renewed his Chalmers contract for 1910.

Gives Up Garage—The Connecticut Steel and Wire Co., of Hartford, Conn., has given up its garage at 57 Allyn street and has leased the second floor of the same building. The Stoddard-Dayton and Reo formerly handled by the firm are no longer carried. The concern will continue the production of trunk racks and the like.

News From the Capital—Franklin Chichester, of New York, has been appointed manager of the Washington, D. C., branch of the White Co. J. N. R. Dixon has established a motor livery service in Washington, D. C., and will use White steamers. H. Cornell Wilson & Brother, agents in Washington, D. C., for the American Simplex, Woods electric and Chase, have leased 1333 Fourteenth street N.W., and after extensive improvements will remove from their present quarters at L street and Vermont avenue.

More Room for Rapid—The Rapid Motor Vehicle corporation has just moved into its latest addition and already has found its new quarters too small. It has, therefore, decided to build an addition to its plant which will be two stories high, 640 feet long and 60 feet wide, giving 76,800 square feet additional floor space. This new building will be built of reinforced concrete and with large glass sides, so as to give plenty of light in all parts of the building. The addition which the company just moved into was started last fall and the company occupied it with a new line of automatic machinery on the first of May.

Closes Foreign Deal—The Triple Action Spring Co., Chicago, Ill., has licensed Parsons Non-Skid Co., of England, to handle the Triple Action spring in England, Ireland, Scotland and Wales during the coming season.

Denies the Sale—Robert R. Ashwell, of Hartford, Conn., denies that G. D. Knox has secured the Ashwell garage. Instead Mr. Knox simply has made arrangements for the storing of Peerless cars, for which he is agent in Hartford.

Death of F. W. Hedgeland—F. W. Hedgeland, president of the Hedgeland Mfg. Co., of Canton, O., died at Canton Sunday, May 30, and was buried Tuesday. Mr. Hedgeland was the inventor of the equalizer bearing his name.

New York Trade Election—John T. Cutting was unanimously elected president of the New York Automobile Trade Association at the annual meeting of the stockholders; C. W. Wurster was chosen first vice-president, and C. P. Skinner second vice-president. The choice for treasurer fell upon Richard Newton. Walter R. Lee was re-elected secretary.

Busy on 1910 Goods—Virtually all the Detroit factories are now well along in the testing-out of their 1910 models and several are already in the field with promise of delivery of their 1910 cars in August and from then on. Building operations are in progress at several places, notably the Ford, Hupmobile and Chalmers-Detroit. The Hupmobile Co. is out with the announcement that it will build 5,000 cars next year. Its handsome new factory on Jefferson avenue is nearly completed now and plans are already being made for the installation of machinery.

BEAUTIFUL LIGHTING EFFECT AT THE CHICAGO KNOX BRANCH

Development Briefs

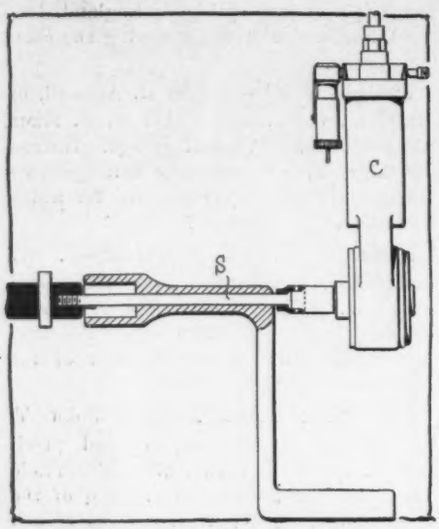
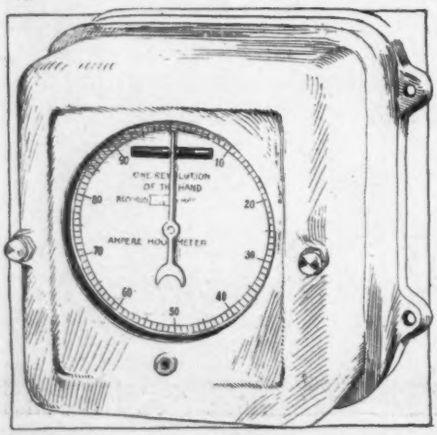


FIG. 1—A. B. C. TIRE PUMP

The Lansing Turntable

THE Lansing Wheelbarrow Co., Lansing, Mich., manufactures the Lansing turntable suitable for public and private garage use. This turntable is a steel platform supported on a central pivot P, Fig. 2, on which 95 per cent of the weight is carried, and also supported by a set of eight rollers R, each 6 inches in diameter and made with 2¾-inch face. The central pivot is supported on a block of masonry or concrete and rollers are similarly supported, the concrete ring for supporting them being 6 inches in depth and 16 inches radial width. The steel platform structure is supported by eight radial braces B, each made of 1¼-inch gas pipe with their inner ends inserted in the pivot hub near its base. The outer edge of the circular platform is reinforced by a ring of angle sheet steel A made 2 inches to the side and of ¼-inch stock. The platform is composed of three sections, 1, 2, 3, of No. 10 sheet steel securely riveted together. In order to lubricate the central pivot P a ½-inch tube closed at its upper end with a cap screw is furnished. The table as ordinarily made is 12 feet 6 inches in diameter and the pit in which it revolves is made 12 feet 8 inches in diameter.



EXTERIOR SANGAMO AMPERE-HOUR METER

New Motor Car Kit

Billings & Spencer Co., Hartford, Conn., is marketing a tool kit in which nothing but drop-forged steel tools are used. The kit includes screw driver, ball, pein hammer, six general service wrenches, combination pliers, three double-end socket wrenches, a cotter pin tool, cold chisel and punch.

A. B. C. Tire Pump

The Artizan Brass Co., Chicago, is manufacturing the A. B. C. pump used for inflating tires. As illustrated, Fig. 1, the pump is of the power variety intended to be driven from the forward end of the crankshaft through the shaft F which is inserted through the drilled part of the starting crank. The pump cylinder C has a diameter of 1⅜-inch and 2-inch stroke and the cylinder is made of cast iron with the interial walls ground. The piston carries three rings which are ground on both sides, and fitted to within 1/10000-inch. The pumps are tested to a pressure of 260 to 280 pounds per square inch. It is not intended to always attach them as illustrated but they may be connected to the pump shaft or other shafts in the motor by gear or chain and sprocket.

Sangamo Ampere-Hour Meter

The Sangamo Electric Co., Springfield, Ill., manufactures an ampere-hour meter specially designed for electric cars. It is suitable for installing on the dash of a vehicle and is finished in polished aluminum and black enamel. This ampere-hour meter is a modification f the company's watt meters which have been on the market for 10 years. The dial is a circle reading from 0 to 90, and by a simple device for setting or altering the position of the hands the meter may be used to recharge the battery to any desired number of ampere-hours. Further, by the use of an insulated contact pin on the dial an auxiliary or relay circuit may be closed when the dial hand touches the pin, thereby automatically opening the charging circuit.

Connecticut Steering Wheel Switch

The Connecticut Telephone and Electric Co., Meriden, Conn., is marketing a steering wheel switch which may be controlled without the hand leaving the steering wheel. The switch provides four positions: Off, battery, magneto, and battery and magneto together, and so serves for cars provided with two systems of ignition, or may be used with either a magneto or battery system. The switch is 1½ inch in diameter and is fastened by a bracket under one of the arms of the steering wheel. Two wires are used, both encased in a flexible brass tubing.

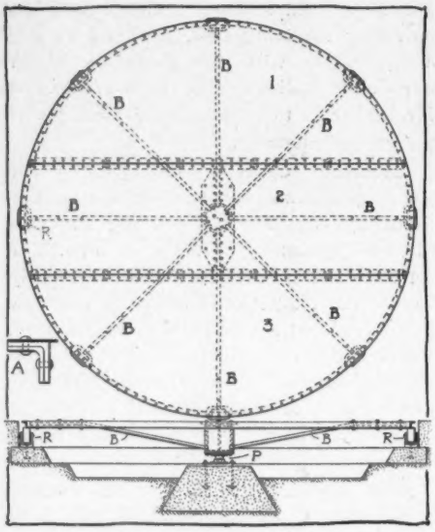


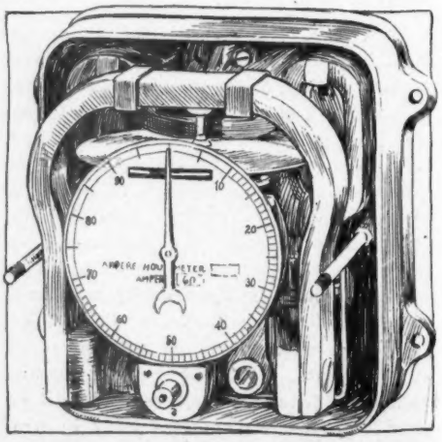
FIG. 2—THE LANSING TURN TABLE

Locked Grease Cup

W. W. & C. F. Tucker, Hartford, Conn., manufacture a lock compression grease cup for motor cars, in which the grease cup cover may be locked to prevent tampering with by outside parties. The cup is no higher from the base up than the ordinary grease cup, and the lock is placed in the top of the cup. To unlock all that is necessary is to push the small cap down and turn to the right to the stop, when it is unlocked for compression. If left unlocked the grease cup is self-locking.

Uses Wood Tire

M. C. Cameron, La Porte, Ind., has invented a rim of wood made in three sections which can be fitted on the clincher rim of a car in case of puncture, and which is intended to avoid the necessity of carrying an extra tire. Making the tire in three sections allows of it being carried under the seat.



INTERIOR SANGAMO AMPERE-HOUR METER